

Service Manual

ORDER NO.
ARP2255

MULTI-PLAY COMPACT DISC PLAYER

PD-M550

UPW, KCXJS, MEMXJS, UBXJS, SD

PD-M455

KCXJS

PD-M450

UPW, KCXJS, MEMXJS, SD

- Refer to the service manual ARP2200, PD-M550, PD-M455 and PD-M450.
- This manual is applicable to the PD-M550/UPW, KCXJS, MEMXJS, UBXJS, SD, PD-M455 /KCXJS, PD-M450/UPW, KCXJS, MEMXJS and SD types.

1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS
 OHITETTAESSA OLET ALTTIINA
 NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
 ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING.
 NÅR SIKKERHEDSAFBRYDERE ER UDE AF
 FUNKTION UNDGA UDSÆTTELSE FOR
 STRÅLING.

VARNING!

OSYNLIG LASERSTRÅLNING NÅR DENNA
 DEL ÄR ÖPPNAD OCH SPÄRREN
 ÄR URKOPPLAD. BETRakta EJ STRÅLEN.



LASER
 Kuva 1
 Lasersäteilyn
 varoitusmerkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH
 EMITS INVISIBLE INFRARED RADIATION
 WHICH IS DANGEROUS TO EYES. THERE IS
 A WARNING SIGN ACCORDING TO PICTURE
 1 INSIDE THE DEVICE CLOSE TO THE LASER
 DIODE.



LASER
 Picture 1
 Warning sign for
 laser radiation

IMPORTANT

THIS PIONEER APPARATUS CONTAINS
 LASER OF HIGHER CLASS THAN 1.
 SERVICING OPERATION OF THE APPARATUS
 SHOULD BE DONE BY A SPECIALLY
 INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 5 mw
 WAVELENGTH: 780-785 nm

LABEL CHECK (MULTI MAGAZINE type)

MEMXJS type

VARO!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
 VARNING!
 Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Beträkta ej strålen.

PRW1233

MEMXJS type

ADVARSEL

USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGA UDSÆTTELSE FOR STRÅLING.
 VORSICHT!
 UNSICHTBARE LASERSTRÄHLUNG TRIT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!

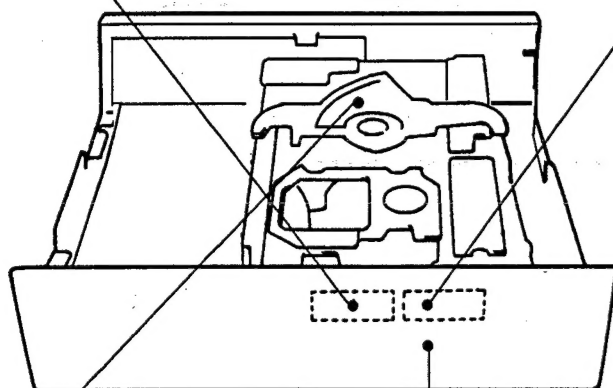
VRW1094

UBXJS type

CAUTION

INVISIBLE LASER
 RADIATION WHEN OPEN,
 AVOID EXPOSURE
 TO BEAM

PRW1018



MEMXJS and
 UBXJS types

CLASS 1
 LASER PRODUCT

VRW-328

MEMXJS and
 UBXJS types

Additional Laser Caution

1. Laser Interlock Mechanism

The ON/OFF (ON : low level, OFF : high level) status of the LPS1 (S601) and LPS2 (S602) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches LPS1 and LPS2 are not ON (low level)(clamped state).

Thus, interlock will no longer function if switches LPS1 (S601) and LPS2 (S602) are deliberately shorted.

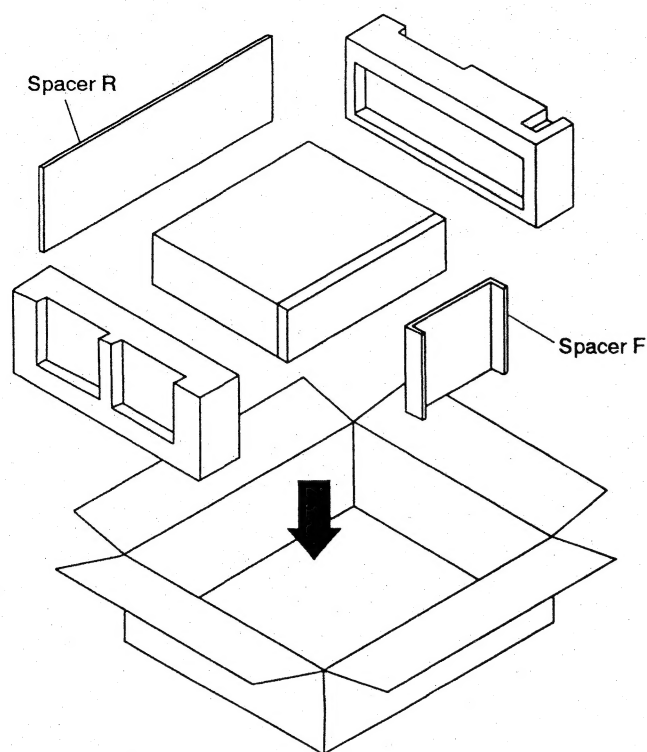
Also, in the test mode *, the interlock mechanism does not operate too.

Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

*: Refer to Service manual ARP2200, For PD-M550, PD-M455, PD-M453 and PD-M450.

● PACKING FOR KCXJ, MEMXJ AND UBXJ TYPES



2. CONTRAST OF MISцерANEOUS PARTS

- NOTES:
- Parts without part number cannot be supplied.
 - Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
 - The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

2.1 FOR PD-M550/UPW, KCXJS, MEMXJS, UBXJS AND SD TYPES

The PD-M550/UPW, KCXJS, MEMXJS, UBXJS and SD types are the same as the PD-M550/KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.						Remarks
		PD-M550/ KU type	PD-M550/ UPW type	PD-M550/ KCXJS type	PD-M550/ MEMXJS type	PD-M550/ UBXJS type	PD-M550/ SD type	
⊙	Mother board assembly	PWM1474	PWM1475	PWM1483	PWM1484	PWM1484	PWM1476	For packing
⚠	Power transformer (AC120V)	PTT1187	.....	PTT1203	.....	.....	.....
⚠	Power transformer (AC220V - 230V)	.....	.....	.....	PTT1204	.....	.....
⚠	Power transformer (AC230V - 240V)	.....	PTT1189	.....	.....	PTT1205	.....
⚠	Power transformer (AC110V, 120-127V, 220V - 230V, 230V - 240V)	.....	.....	.....	.....	.....	PTT1190
⚠	AC power cord	RDG1010	PDG1006	RDG1010	PDG1003	PDG1036	PDG1013	
⚠	Strain relief	CM-22	CM-22B	CM-22	CM-22B	CM-22B	CM-22B	
⚠	Line voltage selector (AC110V, 120-127V, 220V - 230V, 230V - 240V)	.....	.....	.....	.....	.....	PSB1002
	Connection cord with mini plug	PDE-319	.....	PDE-319	.....	.....	.....
	Display window	PAM1477	PAM1477	PAM1477	PAM1505	PAM1505	PAM1477	
	CD packing case	PHG1611	PHG1690	PHG1684	PHG1684	PHG1684	PHG1690	For packing
	Operating instructions (English)	PRB1142	PRB1142	PRB1152	.....	PRB1152	PRB1142
	Operating instructions (English/French/Dutch/Italian/German/Swedish/Spanish/Portuguese)	.....	.....	.....	PRE1150	.....	.....
	Operating instructions (French)	PRC1037	PRC1032	

MOTHER BOARD ASSEMBLIES (PWM1475, PWM1483, PWM1484 AND PWM1476)

The mother board assemblies (PWM1475, PWM1483, PWM1484 and PWM1476) are the same as the mother board assembly (PWM1474) with the exception of the following sections.

Mark	Symbol & Description	Part No.					Remarks
		PWM1474	PWM1475	PWM1483	PWM1484	PWM1476	
⚠	IC31	ICP-N10	ICP-N10	
	D391-D394	1SS254	.....	1SS254	.....	.....
	C366	CKCYF103Z50	CKCYF103Z50	.....	.....	CKCYF103Z50
	C393	CCCSL101J50	.....	CCCSL101J50	.....	.....
	VR102, VR151, VR152	VRTB6VS223	VRTB6VS223	RCP1046	RCP1046	VRTB6VS223	
	VR103	VRTB6VS102	VRTB6VS102	RCP1044	RCP1044	VRTB6VS102	
	R391	RD1/6PM244J	.....	RD1/6PM244J	.....	.....
	R392	RD1/6PM102J	.....	RD1/6PM102J	.....	.....
	JA391, JA392	PKN1004	.....	PKN1004	.....	.....
	[CONTROL (IN, OUT)]						

2.2 FOR PD-M455/KCXJS TYPE

The PD-M455/KCXJS type is the same as the PD-M455/KU

Mark	Symbol & Description
⊙	Mother board assembly
⚠	Power transformer (AC120V)
	CD packing case
	Operating instructions (English)
	Operating instructions (French)

MOTHER BOARD ASSEMBLY (PWM1483)

As to the mother board assembly (PWM1483), refer to PD-M.

1. RESISTORS :
Indicated in Ω , 1/4W, 1/6W and 1/8W, ± 5% tolerance unless otherwise noted k; k Ω , M; M Ω , (F); ± 1%, (G); ± 2%, (K); ± 10%, (M); ± 20% tolerance.

2. CAPACITORS :
Indicated in capacity(μ F)/voltage(V)unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
□ ;DC voltage(V)at play state.
⇔ mA ;DC current at play state.
Value in()is DC current at stop state.

4. OTHERS :
➡ ;Signal route.
⊗ ;Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES : (The underlined indicates the switch position)
SWITCH BOARD ASSEMBLY
S801 : POWER ON — OFF
S802 : EJECT
SERVO MECHANISM ASSEMBLY
INSIDE SWITCH
LOADING BOARD ASSEMBLY
S601 : LPS1
S602 : LPS2
SELECT BOARD ASSEMBLY
S603 : MZS1
S604 : MZS2
S605 : DCHM
S606 : DCNT

FUNCTION BOARD
(PD - M550 TYPE)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RAND
S710 : REPEAT
S711 : PAUSE
S712 : AUTO
S713 : HI - LEVEL
S714 : COMPA
S715 : PGM
S716 : DELETE
S717 : TIME
S718 : 7
S719 : 8
S720 : 9
S721 : 10
S722 : 4
S723 : 5
S724 : 6
S725 : ≥ 20
S726 : 1
S727 : 2
S728 : 3
S729 : +10
S730 : <<1
S731 : >>1
S732 : PLAY
S733 : <<<1
S734 : >>>1
S735 : ADJUST

2.2 FOR PD-M455/KCXJS TYPE

The PD-M455/KCXJS type is the same as the PD-M455/KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		PD-M455/ KU type	PD-M455/ KCXJS type	
● Δ	Mother board assembly Power transformer (AC120V) CD packing case Operating instructions (English) Operating instructions (French)	PWM1474 PTT1187 PHG1596 PRB1142	PWM1483 PTT1203 PHG1685 PRB1152 PRC1037	For packing

MOTHER BOARD ASSEMBLY (PWM1483)
As to the mother board assembly (PWM1483), refer to PD-M550/KCXJS type.

2.3 FOR PD-M450/UPW, KCXJS, MEMXJS AND

The PD-M450/UPW, KCXJS, MEMXJS and SD types are the same as the PD-M455/KCXJS type with the exception of the following sections.

Mark	Symbol & Description	PD-M450/ KU type	PD-M450/ UPW type
●	Mother board assembly	PWM1468	PWM1483
Δ	Headphone board assembly	.....	.....
Δ	Power transformer (AC120V)	PTT1187	.....
Δ	Power transformer (AC220V - 230V)	.....	.....
Δ	Power transformer (AC230V - 240V)	.....	PTT1187
Δ	Power transformer (AC110V, 120 - 127V, 220V - 230V, 230V - 240V)	.....	.....
Δ	Strain relief	CM-22	CM-22
Δ	AC power cord	RDG1010	PDG1010
Δ	Line voltage selector (AC110V, 120 - 127V, 220V - 230V, 230V - 240V)	.....	.....
	Headphone knob	.....	.....
	Display window	PAM1478	PAM1483
	Function panel assembly	PEA1134	PEA1134
	Leg assembly	PXA1201	PXA1201
	Insulator	.....	.....
	Stopper	.....	.....
	Function panel	Non supply	Non supply
	CD packing case	PHG1597	PHG1597
	Operating instructions (English)	PRB1142	PRB1142
	Operating instructions (English/French/Dutch/Italian/ German/Swedish/Spanish/Portuguese)	.....	.....
	Operating instructions (French)	.....	.....

The headphone board assembly of PD-M450/MEMXJS is the same as the PD-M450/KCXJS type.

MOTHER BOARD ASSEMBLIES (PWM1480, PWM1481 and PWM1483)
The mother board assemblies (PWM1480, PWM1481 and PWM1483) are the same as the PD-M455/KCXJS type with the exception of the following sections.

Mark	Symbol & Description	PWM1468	PWM1483
Δ	IC31 IC406 VR102, VR151, VR152 VR103 R445, R446	..... ..... VRTB6VS223 VRTB6VS102 RD1/6PM681J	..... ..... RCP RCP RD1/6P
	R447, R448 CN401 C366	..... ..... CKCYF103Z50	...............

1. RESISTORS :
Indicated in Ω , 1/4W, 1/6W and 1/8W, ± 5% tolerance unless otherwise noted k; k Ω ,
M; M Ω , (F); ± 1%, (G); ± 2%, (K); ± 10%, (M); ± 20% tolerance.

2. CAPACITORS :
Indicated in capacity(μF)/voltage(V)unless otherwise noted p ; pF. Indication without
voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :

□

 :DC voltage(V)at play state.
⇔ mA :DC current at play state.
Value in()Is DC current at stop state.

4. OTHERS :
→ ;Signal route.
⊗ ;Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety
factor of the part. Therefore, when replacing, be sure to use parts of identical
designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to
improvements in design.

5. SWITCHES : (The underlined indicates the switch position)

SWITCH BOARD ASSEMBLY

S801 : POWER ON — OFF

S802 : EJECT

SERVO MECHANISM ASSEMBLY

INSIDE SWITCH

LOADING BOARD ASSEMBLY

S601 : LPS1

S602 : LPS2

SELECT BOARD ASSEMBLY

S603 : MZS1

S604 : MZS2

S605 : DCHM

S606 : DCNT

FUNCTION BOARD ASSEMBLY
(PD – M550 TYPE)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI – LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S718 : 7
S719 : 8
S720 : 9
S721 : 10
S722 : 4
S723 : 5
S724 : 6
S725 : ≥ 20
S726 : 1
S727 : 2
S728 : 3
S729 : +10
S730 : <<<] MANUAL SEARCH
S731 : >>>]
S732 : PLAY
S733 : <<<] TRACK SEARCH
S734 : >>>]
S735 : ADLC

FUNCTION BOARD ASSEMBLY
(PD – M455 , AND PD – M450 TYPES)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI – LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S730 : <<<] MANUAL SEARCH
S731 : >>>]
S732 : PLAY
S733 : <<<] TRACK SEARCH
S734 : >>>]
S735 : ADLC

2.3 FOR PD-M450/UPW, KCXJS, MEMXJS AND SD TYPES

The PD-M450/UPW, KCXJS, MEMXJS and SD types are the same as the PD-M450/KU type with the exception of the following sections.

/KU type with the exception of the following sections.

Part No.		Remarks
PD-M455/ KU type	PD-M455/ KCXJS type	
PWM1474 PTT1187 PHG1596 PRB1142	PWM1483 PTT1203 PHG1685 PRB1152 PRC1037	For packing

D-M550/KCXJS type.

Mark	Symbol & Description	Part No.					Remarks
		PD-M450/ KU type	PD-M450/ UPW type	PD-M450/ KCXJS type	PD-M450/ MEMXJS type	PD-M450/ SD type	
●	Mother board assembly	PWM1468	PWM1468	PWM1480	PWM1481	PWM1470	For packing
△	Headphone board assembly	.....	.....	.....	Non supply	.....
△	Power transformer (AC120V)	PTT1187	.....	PTT1203	.....	.....
△	Power transformer (AC220V - 230V)	.....	.....	.....	PTT1204	.....
△	Power transformer (AC230V - 240V)	.....	PTT1189	.....	.....	.....
△	Power transformer (AC110V, 120 - 127V, 220V - 230V, 230V - 240V)	.....	.....	.....	.....	PTT1190
△	Strain relief	CM- 22	CM-22B	CM- 22	CM- 22B	CM- 22B	
△	AC power cord	RDG1010	PDG1006	RDG1010	PDG1003	PDG1013	
△	Line voltage selector (AC110V, 120 - 127V, 220V - 230V, 230V - 240V)	.....	.....	.....	.....	PSB1002
	Headphone knob	.....	.....	.....	PAC1370	.....
	Display window	PAM1478	PAM1478	PAM1478	PAM1506	PAM1478	
	Function panel assembly	PEA1134	PEA1134	PEA1134	PEA1160	PEA1134	
	Leg assembly	PXA1201	PXA1201	PXA1201	.....	PXA1201
	Insulator	.....	.....	.....	VNK1095	.....
	Stopper	.....	.....	.....	PNM1070	.....
	Function panel	Non supply	Non supply	Non supply	Non supply	Non supply	
	CD packing case	PHG1597	PHG1691	PHG1686	PHG1686	PHG1691	
	Operating instructions (English)	PRB1142	PRB1142	PRB1152	.....	PRB1142
	Operating instructions (English/French/Dutch/Italian/ German/Swedish/Spanish/Portuguese)	.....	.....	.....	PRE1150	.....
	Operating instructions (French)	.....	.....	PRC1037	.....	PRC1032

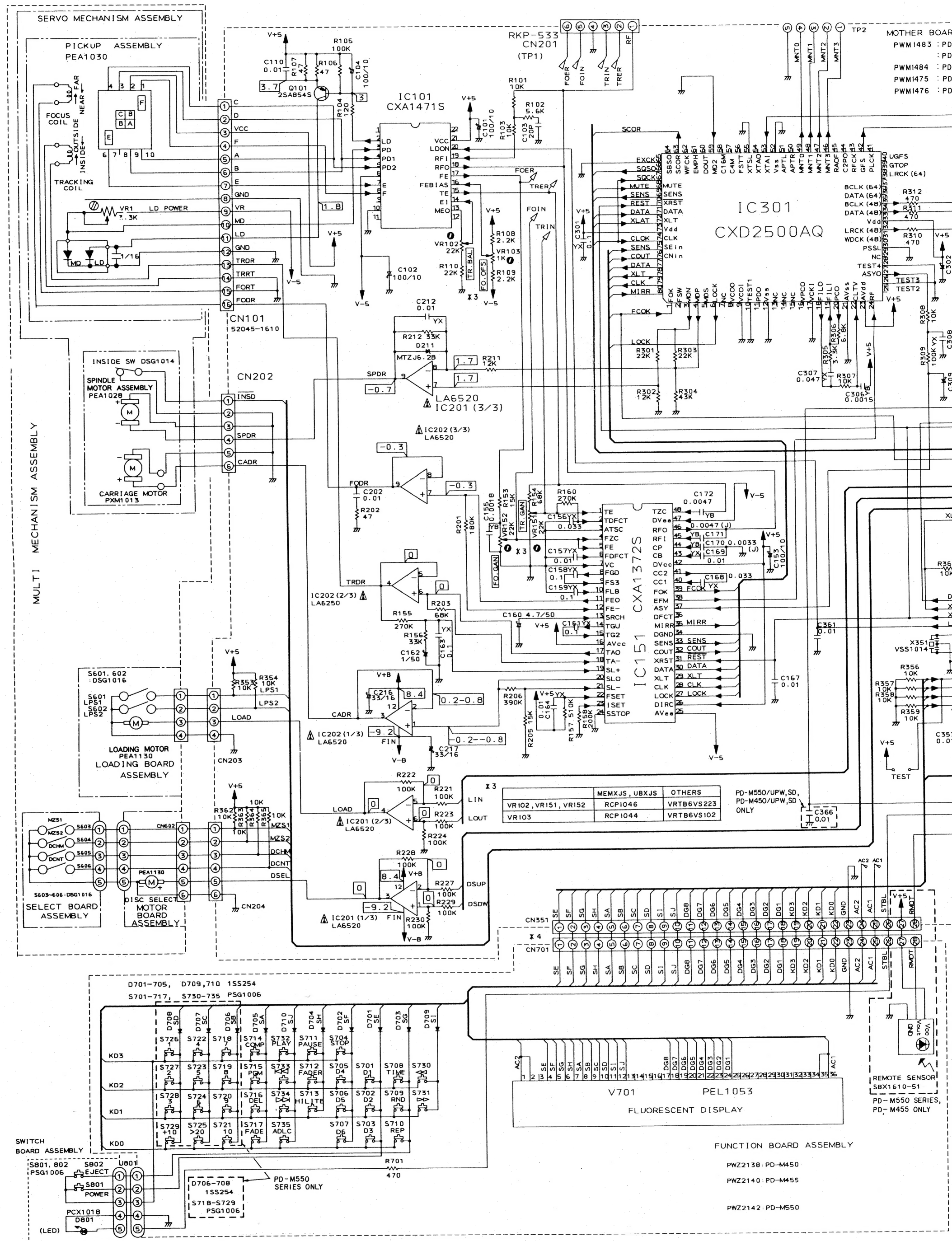
The headphone board assembly of PD-M450/MEMXJS is the same as that of PD-M550.

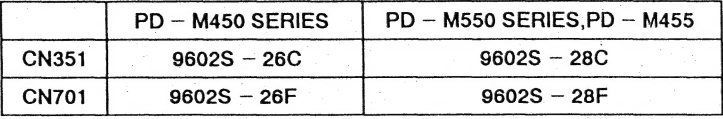
MOTHER BOARD ASSEMBLIES (PWM1480, PWM1481 and PWM1470)

The mother board assemblies (PWM1480, PWM1481 and PWM1470) are the same as the mother board assembly (PWM1468) with the exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		PWM1468	PWM1480	PWM1481	PWM1470	
△	IC31	ICP- N10	
	IC406	.....	.....	BA15218	.....
	VR102, VR151, VR152	VRTB6VS223	RCP1046	RCP1046	VRTB6VS223	
	VR103	VRTB6VS102	RCP1044	RCP1044	VRTB6VS102	
	R445, R446	RD1/6PM681J	RD1/6PM681J	RD1/6PM271J	RD1/6PM681J	
	R447, R448	.....	.....	RD1/6PM471J	.....
	CN401	.....	.....	Non supply	.....
	C366	CKCYF103Z50	.....	.....	CKCYF103Z50

2.4 SCHEMATIC DIAGRAM



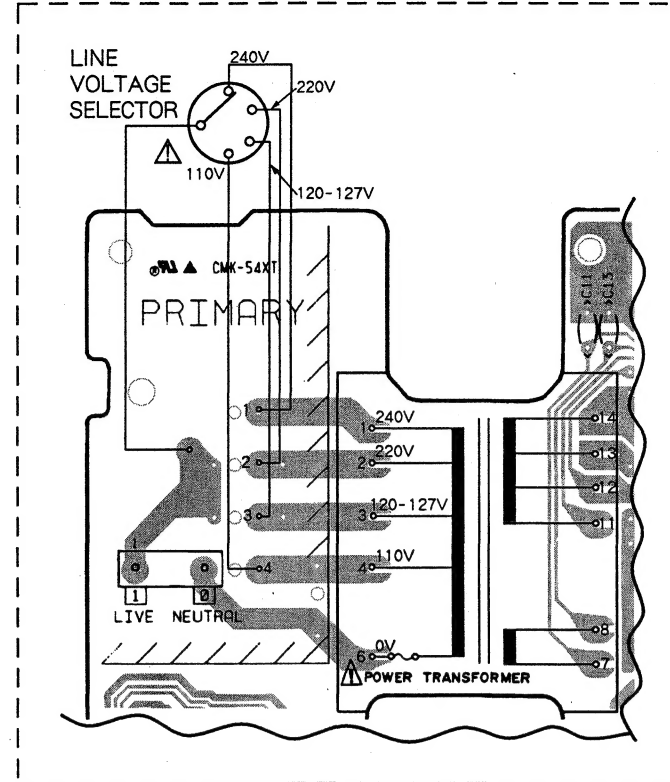


2.5 P.C.BOARD PATTERN

P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zener diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styro capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noleless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

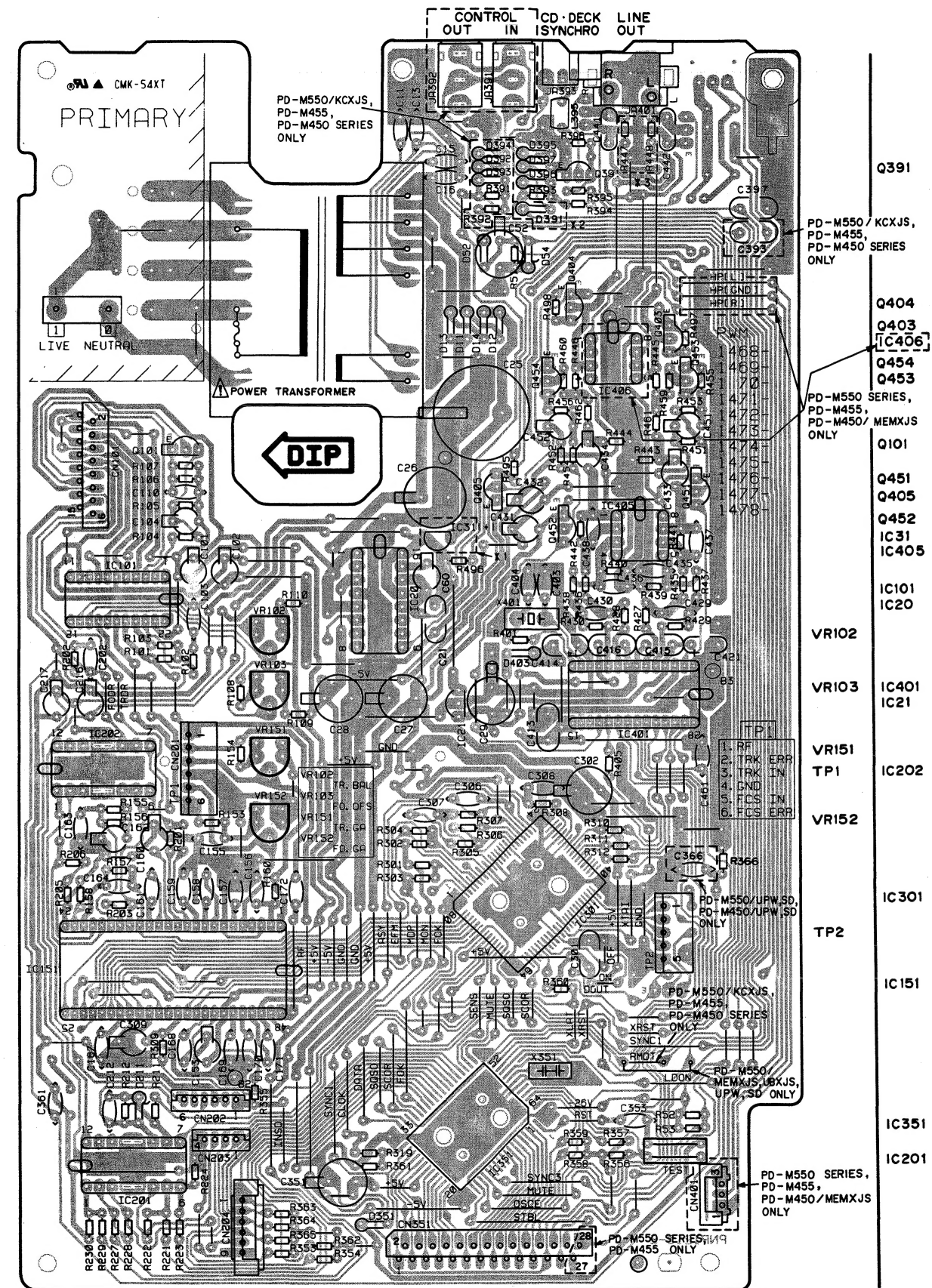
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

● FOR PD-M550/SD AND PD-M450/SD

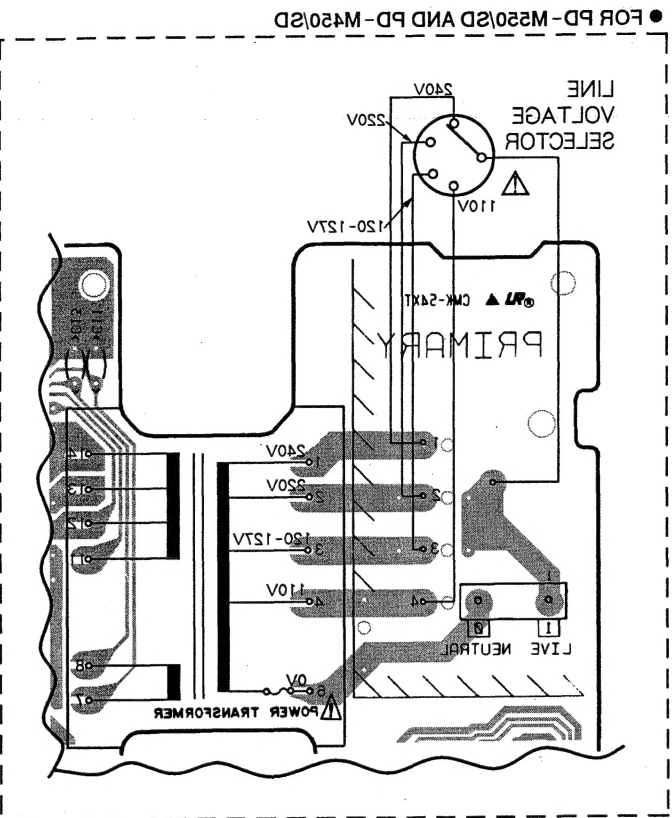


MOTHER BOARD ASSEMBLY
 (PWM1483 : PD-M550/KCXJS,PD-M455/KCXJS)
 (PWM1484 : PD-M550/MEMXJS,UBXJS)
 (PWM1475 : PD-M550/UPW)
 (PWM1476 : PD-M550/SD)
 (PWM1480 : PD-M450/KCXJS)
 (PWM1481 : PD-M450/MEMXJS)
 (PWM1468 : PD-M450/UPW)
 (PWM1470 : PD-M450/SD)

PD-M550/UPW,KCXJS,MEMXJS,UBXJS,SD
 PD-M455/KCXJS,PD-M450/UPW,KCXJS,MEMXJS,SD

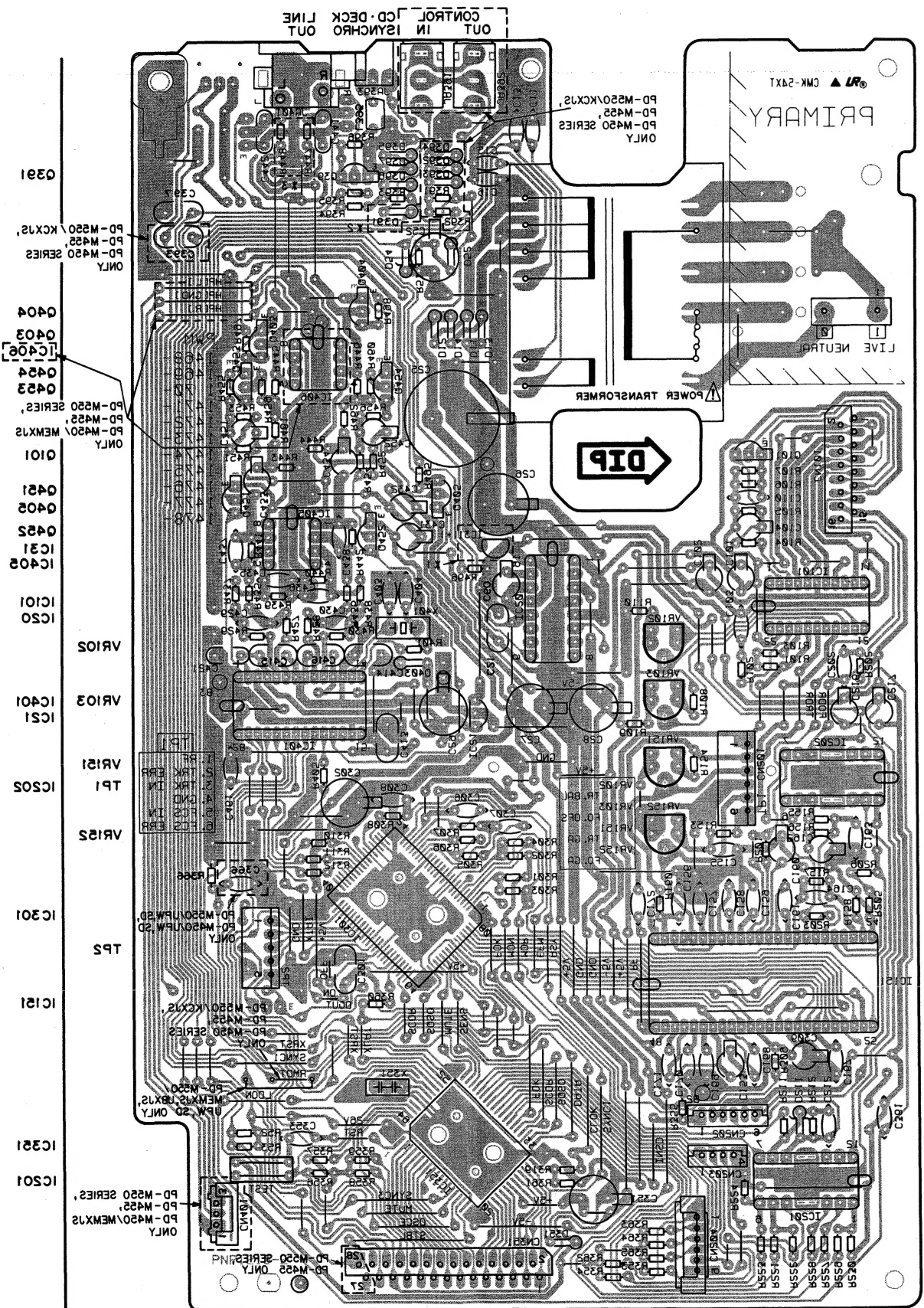


5.2 P.C. BOARD PATTERN



- MOTHER BOARD ASSEMBLY
- (PWM1483 : PD-M250/KCX12,PD-M452/KCX12)
 - (PWM1484 : PD-M250/WMX12,UBX12)
 - (PWM1475 : PD-M250/UPW)
 - (PWM1476 : PD-M250/2D)
 - (PWM1480 : PD-M450/KCX12)
 - (PWM1481 : PD-M450/WMX12)
 - (PWM1468 : PD-M450/UPW)
 - (PWM1470 : PD-M450/2D)

This P.C.B. connection diagram is viewed from the foil side.



PD-M452/KCX12,PD-M450/UPW,KCX12,WMX12,2D PD-M250/UPW,KCX12,WMX12,UBX12,2D

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PIONEER®
The Art of Entertainment

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Service Manual



● PD-M550 TYPE

ORDER NO.
ARP2200

MULTI-PLAY COMPACT DISC PLAYER

PD-M550

PD-M455

PD-M453

PD-M450

PD-M550, PD-M455, PD-M453 AND PD-M450 HAVE THE FOLLOWING:

Type	Model				Power Requirement	Remarks
	PD-M550	PD-M455	PD-M453	PD-M450		
KU	○	○	○	○	AC120V only	
KUXJS	○	○	○	○	AC120V only	
KC	○	○	—	○	AC120V only	
KCXJS	○	○	—	○	AC120V only	
MEM	○	—	—	○	AC220V-230V	
MEMXJS	○	—	—	○	AC220V-230V	
UB	○	—	—	—	AC230V-240V	
UBXJS	○	—	—	—	AC230V-240V	
UPW	○	—	—	○	AC230V-240V	
SD	○	—	—	○	AC110V, 120V-127V, 220V, 240V(switchable)	

- The KUXJS type of PD-M550, PD-M455, PD-M453 and PD-M450, manufactured in Singapore, are identical with the KU type of PD-M550, PD-M455, PD-M453 and PD-M450 respectively.

For identification, "MADE IN SINGAPORE" is shown on the rear panel of the product.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
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- This manual is applicable to the PD- M550/KU, KC, KUXJS, MEM, UB, PD- M455/KU, KC, KUXJS, PD- M453/KU, KUXJS, PD- M450/KU, KC, KUXJS and MEM types.
- As to the PD- M550/KC, KUXJS, MEM, UB, PD- M455/KC, KUXJS, PD- M453/KUXJS, PD- M450 /KC, KUXJS and MEM types, refer to page 74- 84.
- As to the other types, refer to applicable service manuals.
- As to the mechanism descriptions, refer to the PD- Z84M service guide(ARP2190).
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

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This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

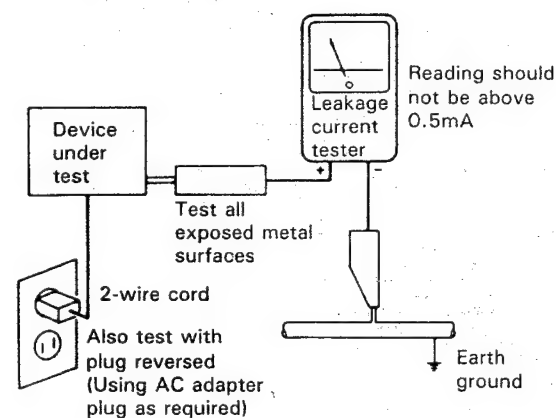
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
ÄLÄ KATSO SÄTEESEEN.



LASER
Kuva 1
Lasersäteilyn
varoitusmerkki

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING
NÅR SIKKERHEDSAFBRYDERE ER UDE AF
FUNKTION. UNDGÅ UDSAETTELSE FOR
STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÅR DENNA
DEL ÄR ÖPPNAD OCH SPÄRREN
ÄR URKOPPLAD. BETRÄKTA EJ STRÅLEN.

WARNING!
DEVICE INCLUDES LASER DIODE WHICH
EMITS INVISIBLE INFRARED RADIATION
WHICH IS DANGEROUS TO EYES. THERE IS
A WARNING SIGN ACCORDING TO PICTURE
1 INSIDE THE DEVICE CLOSE TO THE LASER
DIODE.



LASER
Picture 1
Warning sign for
laser radiation

IMPORTANT
THIS PIONEER APPARATUS CONTAINS
LASER OF HIGHER CLASS THAN 1.
SERVICING OPERATION OF THE APPARATUS
SHOULD BE DONE BY A SPECIALLY
INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LABEL CHECK (MULTI MAGAZINE type)

MEM type

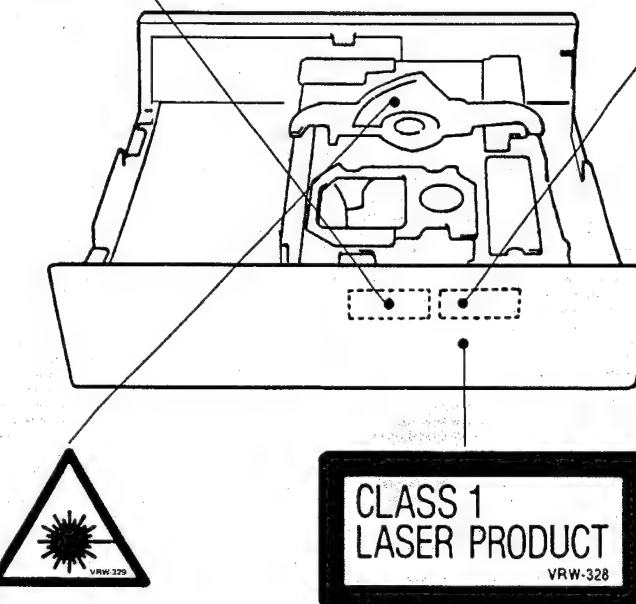
UB type

MEM type

VARO!
Avattaessa ja suojalukitus ohitetta-
essa olet alttiina näkymättömälle
lasersäteilylle. Älä katso säteeseen.
VARO!
Osynlig laserstrålning när denna del
är öppnad och spärren är urkopplad.
Betrakta ej strålen.
PRW1233

ADVERSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAF-
BRYDERE ER UDE AF FUNKTION.
UNGÅ UDSAETTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRÅHLUNG TRIT AUS, WENN DECKEL
(ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
VRW1094

CAUTION
INVISIBLE LASER
RADIATION WHEN OPEN,
AVOID EXPOSURE
TO BEAM
PRW1018



MEM and UB types

MEM and UB types

Additional Laser Caution

- Laser Interlock Mechanism**
The ON/OFF (ON : low level, OFF : high level) status of the LPS1 (S601) and LPS2 (S602) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches LPS1 and LPS2 are not ON (low level) (clamped state). Thus, interlock will no longer function if switches LPS1 (S601) and LPS2 (S602) are deliberately shorted. Also, in the test mode *, the interlock mechanism does not operate too. Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).
- When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

*: Refer to page 30.

NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

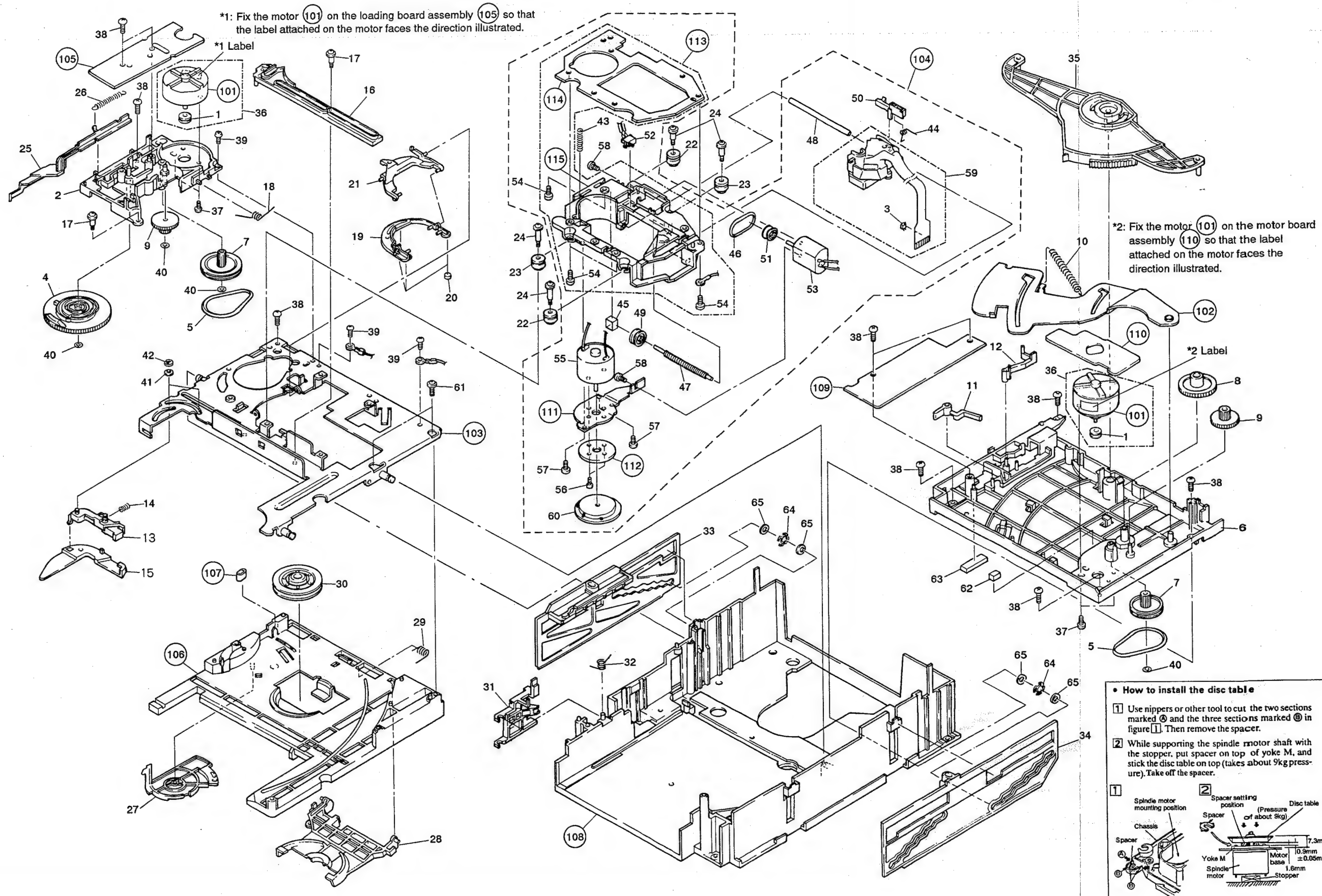
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
Δ	1	Strain relief	CM-22		24	Function panel assembly	PEA1136
	2	Flexible cable (28P)	PDD1070		25	Function panel assembly	PEA1135
	3	Flexible cable (28P) (For PD-M455 and PD-M453 types)	PDD1070		25	Function panel assembly (For PD-M455 type)	PEA1162
	3	Flexible cable (26P) (For PD-M450 type)	PDD1079		25	Function panel assembly (For PD-M453 type)	PEA1134
Δ	4	Power transformer (AC120V)	PTT1187		26	Track button A (For PD-M455 type)	PAC1564
Δ	5	AC power cord	RDG1010		26	Track button (For PD-M453 and PD-M450 types)	PAC1579
	6	Stopper (PD-M550 type only)	PNM1070	●	27	Mother board assembly (For PD-M550 and PD-M455 types)	PWM1474
	7	Insulator (PD-M550 type only)	VNK1095	●	27	Mother board assembly (For PD-M453 type)	PWM1472
	8	Leg assembly (PD-M455, PD-M453 and PD-M450 types only)	PXA1201	●	27	Mother board assembly (For PD-M450 type)	PWM1468
	9	Bonnet	PYY1149	●	28	Function board assembly	PWZ2142
	10	Headphone knob	PAC1370	●	29	Function board assembly (For PD-M455 and PD-M453 types)	PWZ2140
	11	Time button B (PD-M550 type only)	PAC1549	●	29	Function board assembly (For PD-M450 type)	PWZ2138
	12	Mode button A	PAC1560		30	Screw	BBZ30P060FMC
	13	Mode button B	PAC1563		31	Screw	BBZ30P080FZK
	14	Function button	PAC1562		32	Screw	BBZ30P120FZK
	15	Program button	PAC1577		33	Screw	FBT40P080FZK
	16	Power button A	PAC1596		34	Screw	IBZ30P060FCC
	17	Power button A (For PD-M455 type)	PAC1596		35	Screw	IBZ30P100FCC
	17	Power button (For PD-M453 and PD-M450 types)	PAC1561		36	Screw	IBZ30P180FMC
	18	Door name plate.	PAM1461		37	Screw	PDZ30P050FMC
	19	Door spring	PBH1022				
	20	Door BK	PNW1894				
	21	Display window	PAM1477				
	22	Display window (For PD-M455 type)	PAM1476				
	22	Display window (For PD-M453 type)	PAM1511		101	Switch board assembly	
	22	Display window (For PD-M450 type)	PAM1478		102	Headphone board assembly	
	23	LED lens	PNW2019		103	PCB mold	
					104	Rear base	
					105	Under base	
					106	Multi mechanism assembly	
					107	PIONEER badge	
					108	Function panel	

2.2 MULTI MECHANISM ASSEMBLY

Parts List

Mark	No.	Description	Part No.
	1	Motor pulley	PNW1634
	2	Gear holder	PNW1929
	3	Semi-fixed resistor (VR1)	PCP1008
	4	Cam gear	PNW1923
	5	Belt	PEB1138
	6	Top guide	PNW1914
	7	Gear pulley	PNW1918
	8	Gear S	PNW1919
	9	Gear L	PNW1920
	10	Eject spring	PBH1107
	11	Switch lever	PNW1927
	12	Seven bar	PNW1931
	13	Sub rotary lever	PNW1933
	14	Sub rotary lever spring	PBH1111
	15	Rotary lever	PNW1932
	16	Drive plate	PNW1930
	17	Motor screw	PBA - 112
	18	Holder lever spring	PBH1110
	19	Disc holder	PNW1924
	20	Cushion A	PED1001
	21	Holder lever	PNW1925
	22	Float rubber	PEB1014
	23	Float rubber	PEB1132
	24	Float screw	PBA1055
	25	Release lever	PNW1934
	26	Release spring	PBH1106
	27	Clamper cam	PNW1922
	28	Clamper holder	PNW1921
	29	Clamper spring	PBH1109
	30	Clamper	PNW1857
	31	Lock lever	PNW1917
	32	Lock spring	PBH1108
	33	Stair L	PNW1915
	34	Stair R	PNW1916
	35	Synchronize lever	PNW1926
	36	Motor assembly (LOADING, DISC SELECT)	PEA1130
	37	Screw	PMZ26P040FMC
	38	Screw	PPZ30P080FMC
	39	Screw	BBZ30P060FMC
	40	Washer	WT26D047D025
	41	Washer	WA31D054D025
	42	E ring	Z39-010
	43	Earth spring	PBH1009
	44	Drive spring	PBH1084
	45	Plate spring	PBK1057

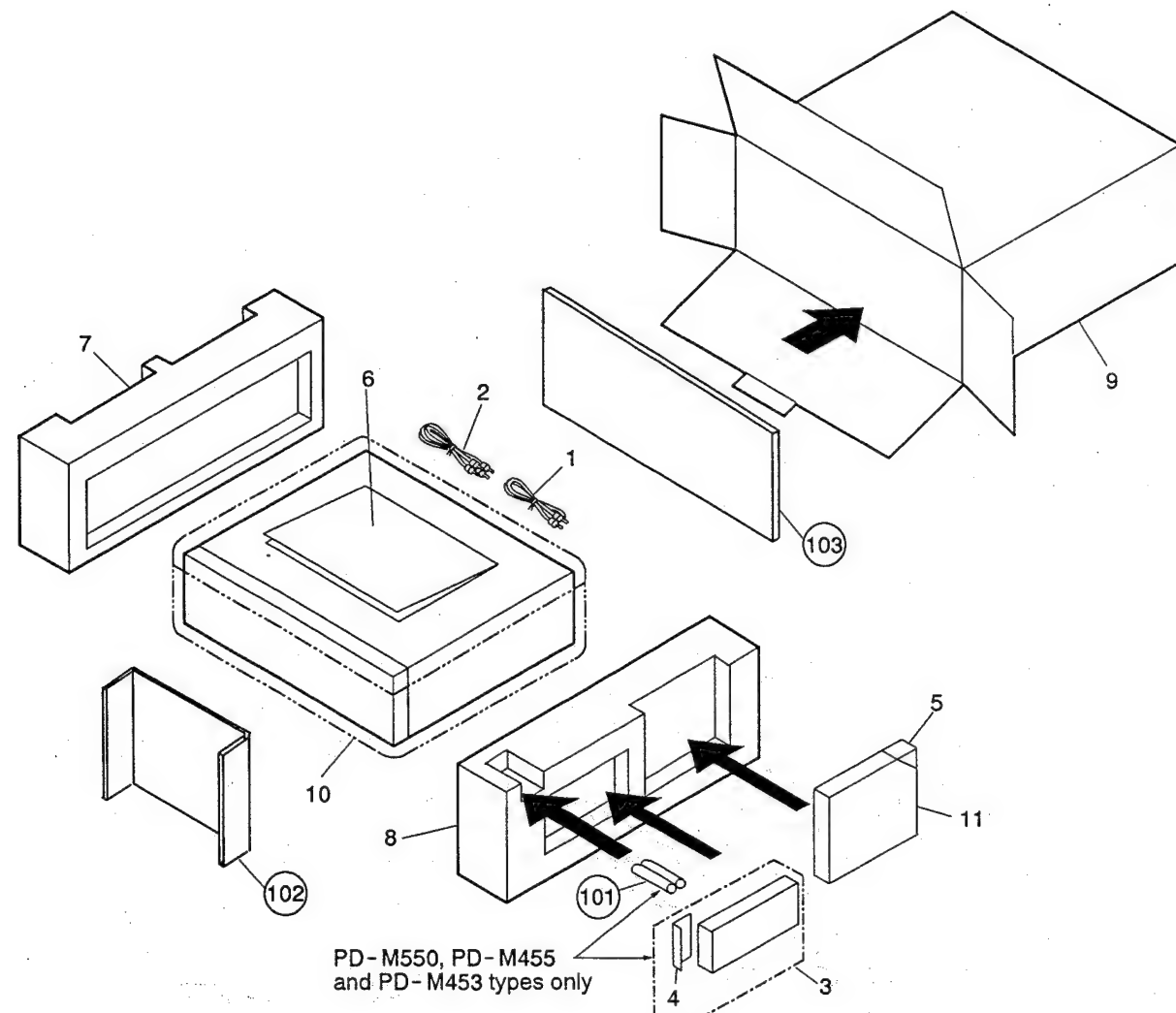
Mark	No.	Description	Part No.
	46	Belt	PEB1072
	47	Drive screw	PLA1003
	48	Guide bar	PLA1071
	49	Pulley	PNW1066
	50	Half nut	PNW1605
	51	• • • • •	
	52	Push switch (INSIDE)	DSG1014
	53	D.C.motor (CARRIAGE)	PXM1013
	54	Screw	PBZ30P080FMC
	55	D.C.motor assembly (with oil)(SPINDLE)	PEA1028
	56	Screw	JFZ20P040FMC
	57	Screw	BPZ20P080FZK
	58	Screw	PMZ20P030FMC
	59	Pickup assembly	PEA1030
	60	Disc table assembly	PEA1035
	61	Screw	IPZ30P080FMC
	62	Rubber spacer	PEB1178
	63	Rubber spacer	PEB1179
	64	Silent ring	PBK1093
	65	Washer	WA62D130D025
	101	Motor	
	102	Eject lever	
	103	Upper chassis	
	104	Servo mechanism assembly M	
	105	Loading board assembly	
	106	Sub chassis	
	107	Rubber tube	
	108	Main chassis	
	109	Select board assembly	
	110	Motor board assembly	
	111	Motor base	
	112	Yoke M	
	113	Mechanism base assembly T	
	114	Mechanism base	
	115	Mechanism chassis	



3. PACKING

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Connection cord with mini plug	PDE-319		9	CD packing case (For PD-M550 type)	PHG1611
	2	Connection cord with pin plug	PDE1109		9	CD packing case (For PD-M455 type)	PHG1596
	3	Remote control unit (For PD-M550 type)	PWW1066		9	CD packing case (For PD-M453 type)	PHG1668
	3	Remote control unit (For PD-M455 and PD-M453 types)	PWW1068		9	CD packing case (For PD-M450 type)	PHG1597
	4	Battery cover (For PD-M550 type)	PZN1001		10	Mirror mat sheet	Z23-007
	4	Battery cover (For PD-M455 and PD-M453 types)	PZN1010		11	PP case	PYY1141
	5	Magazine assembly	PXA1308		101	Dry cell battery(R03, AAA)	
	6	Operating instructions (English)	PRB1142		102	Spacer F	
	7	Styrol protector (L)	PHA1157		103	Spacer R	
	8	Styrol protector (R)	PHA1158				



4. IC INFORMATION

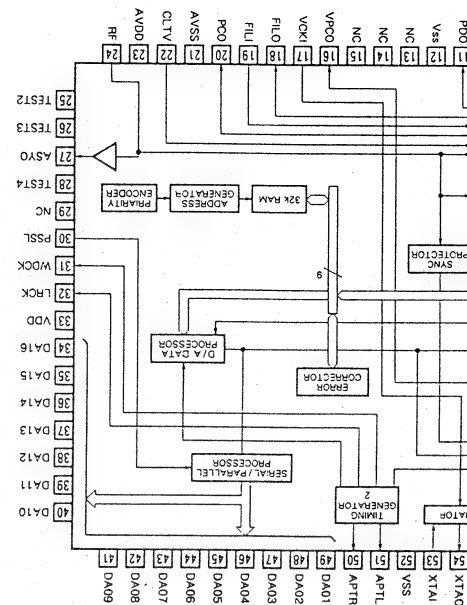
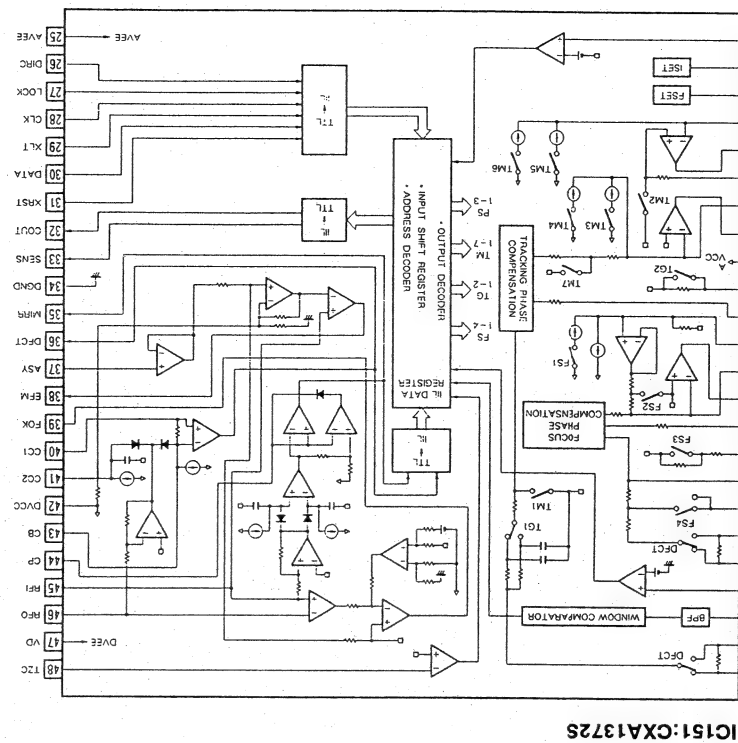
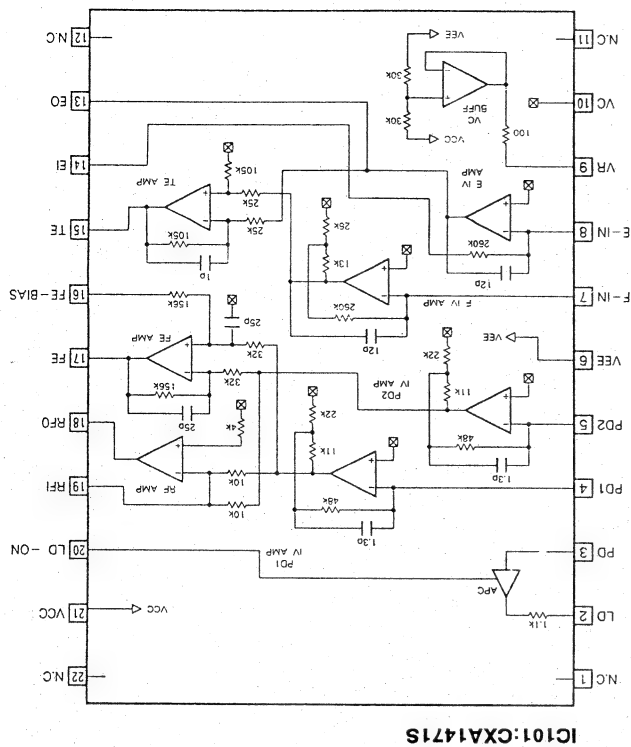
■ PD2026A

D/A converter

● Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function															
1	P/ \overline{S}	I*	Switching the serial and parallel controls.	20	LATCH (EM1)	I*	Data latch signal input for attenuator when controlling the serial. Select the deemphasis filter mode when controlling the parallel.															
2	RZ	O	Digital zero detection output of R ch.																			
3	\overline{TEST}	I*	Test terminal (usually, use at "H")																			
4	VDA	—	Analog power supply for R ch DA converter.	21	SHIFT (EM2)	I	Shift clock input for attenuator when controlling the serial. Select the deemphasis filter mode when controlling the parallel. <table border="1"><tr><td>EM1</td><td>L</td><td>L</td><td>H</td><td>H</td></tr><tr><td>EM2</td><td>L</td><td>H</td><td>L</td><td>H</td></tr><tr><td>Mode</td><td>44.1</td><td>OFF</td><td>48</td><td>32</td></tr></table> (kHz)	EM1	L	L	H	H	EM2	L	H	L	H	Mode	44.1	OFF	48	32
EM1	L	L	H					H														
EM2	L	H	L					H														
Mode	44.1	OFF	48					32														
5	RO	O	Data positive direction output of R ch.																			
6	\overline{RO}		Data reverse direction output of R ch.																			
7	GNDA	—	Analog ground for R ch DA converter.																			
8	GNDA	—	Analog ground for L ch DA converter.																			
9	\overline{LO}	O	Data reverse output of L ch.	22	ATT (MUTE)	I	Data input for attenuator when controlling the serial. Becomes muting terminal when controlling the parallel. Mute ON at "H".															
10	LO		Data positive output of L ch.																			
11	VDA	—	Analog power supply for L ch DA converter.	23	OSCE	I*	System clock control. Stop the system clock at "L".															
12	GNDX	—	Ground of oscillating section.																			
13	XI	I	Crystal oscillating circuit input.																			
14	XO	O	Crystal oscillating circuit output.	24	\overline{RESET}	I*	Reset terminal. Reset the $\Sigma \Delta$ circuit at "L" and attenuate data becomes 00 (HEX).															
15	VDX	—	Power supply of oscillating section.																			
16	GND	—	Ground of logic section.	25	DATA	I	Data input.															
17	C	I*	Clock selection. "L" : 256fs , "H" : 384fs	26	BCK		Bit clock input.															
18	LZ	O	Digital zero detection output of L ch.	27	LRCK		LR clock input (L ch data at "H").															
19	MCK		System clock output.	28	VDD	—	Power supply of the logic section.															

I*: Input terminals with pull-up resistor.



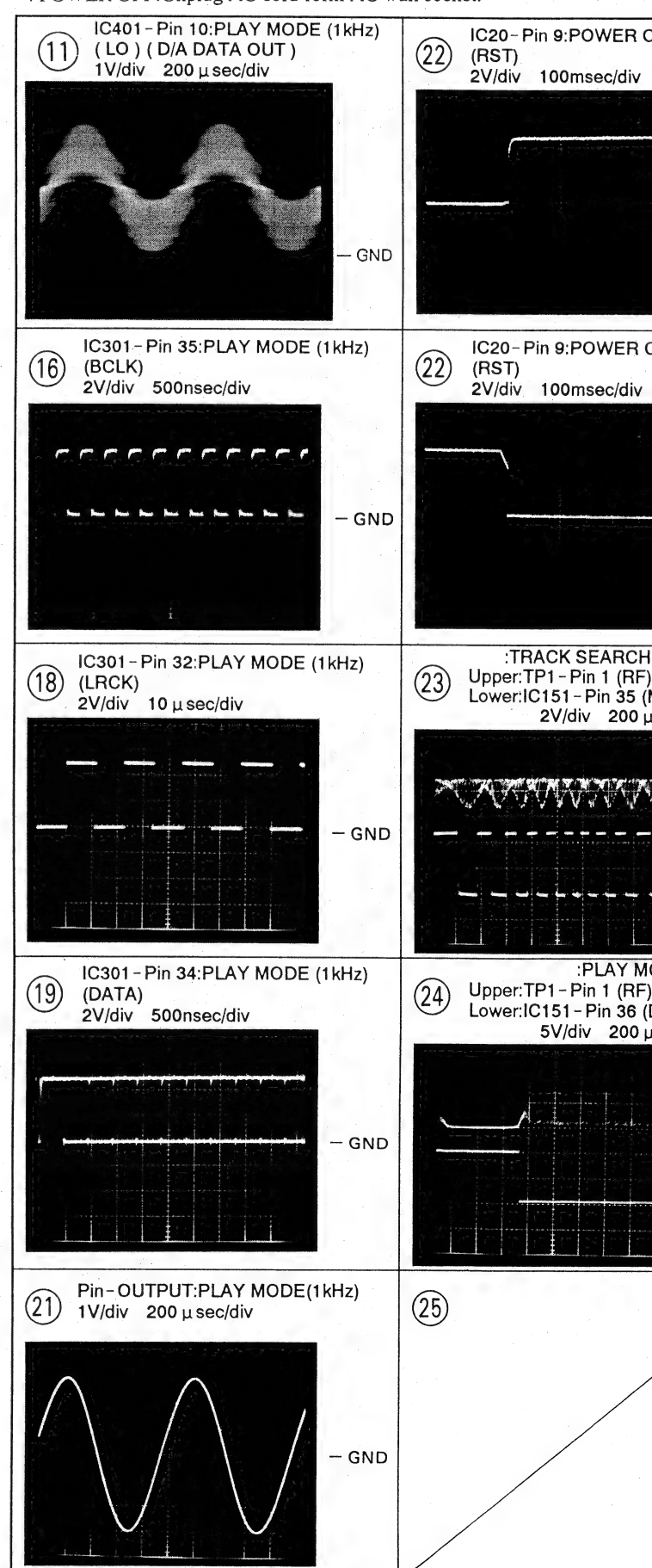
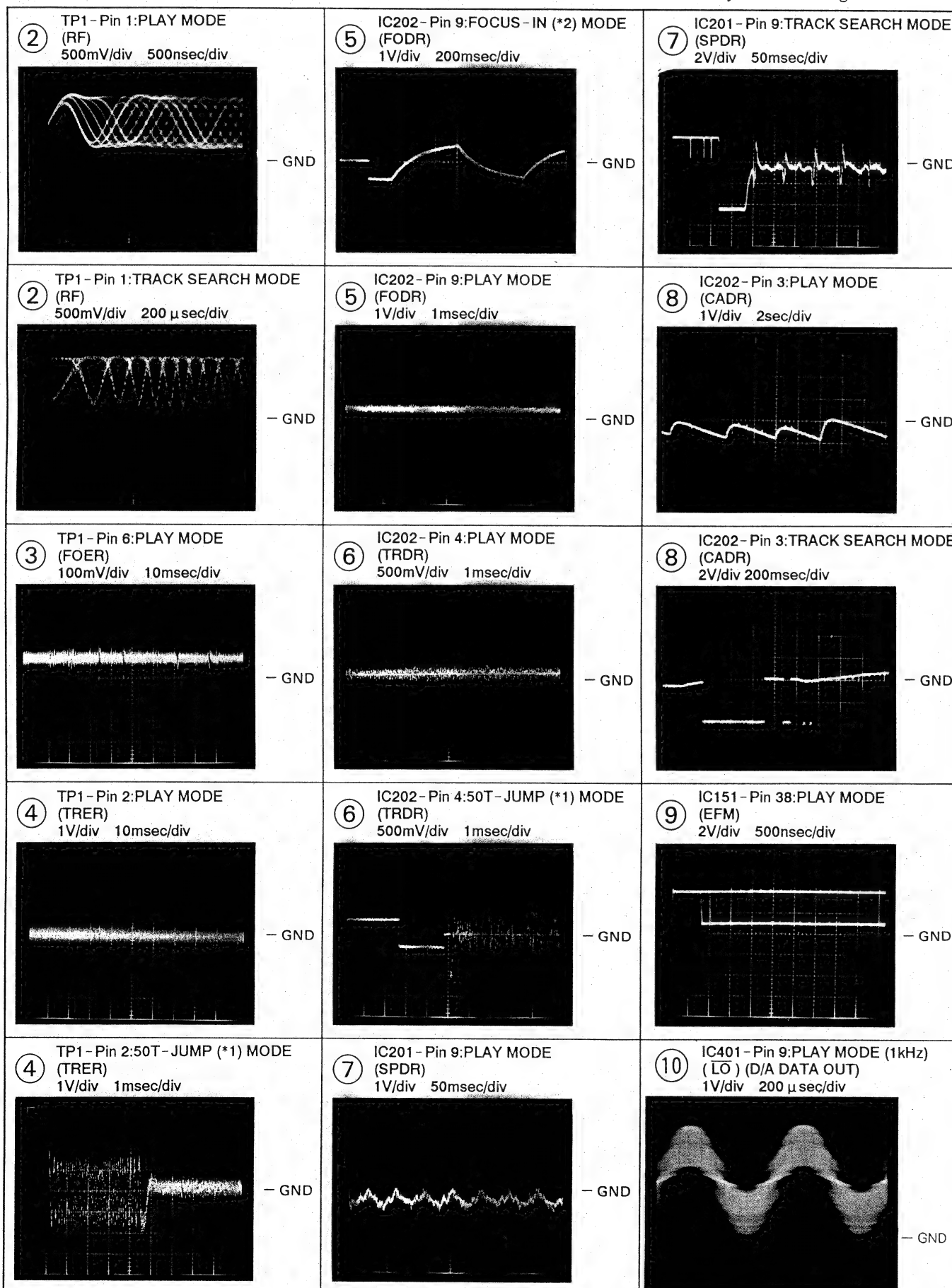
5. SCHEMATIC DIAGRAM

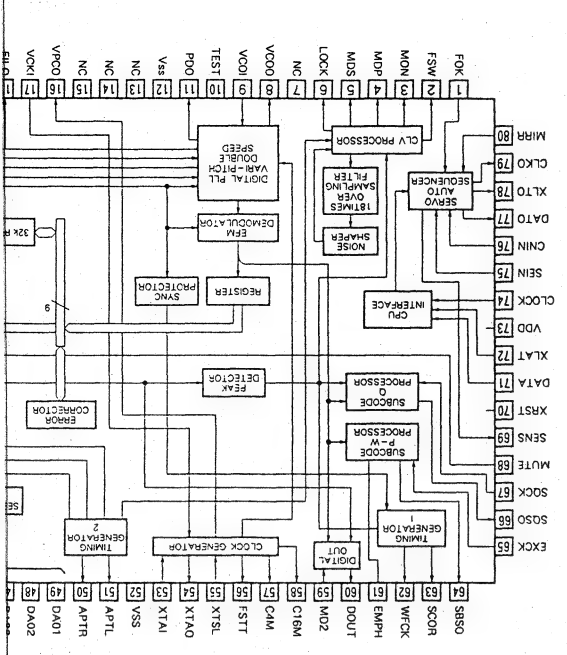
5.1 Waveforms

Note: The encircled numbers denote measuring in the schematic diagram.

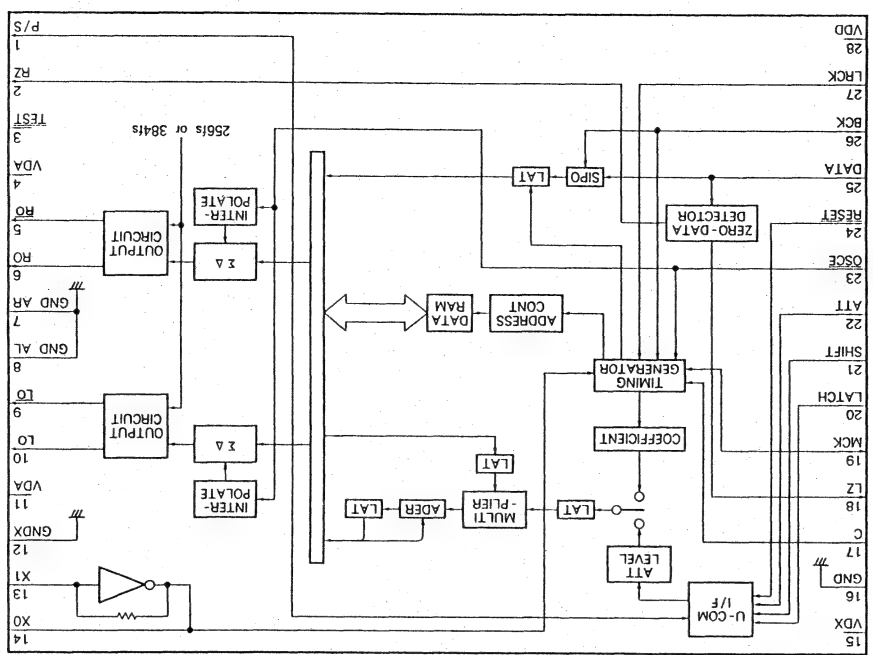
*1 50T-JUMP: After switching to the pause mode, press the manual search key.
*2 FOCUS-IN: Press the key without loading a disc.

*3 POWER ON: Plug AC cord into AC wall socket.
*4 POWER OFF: Unplug AC cord from AC wall socket.

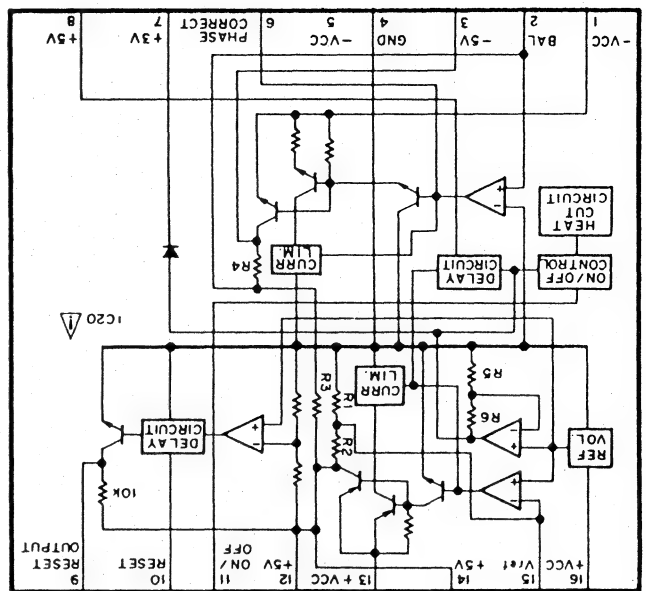




IC301: CXD2500AQ



IC401: PD2026A



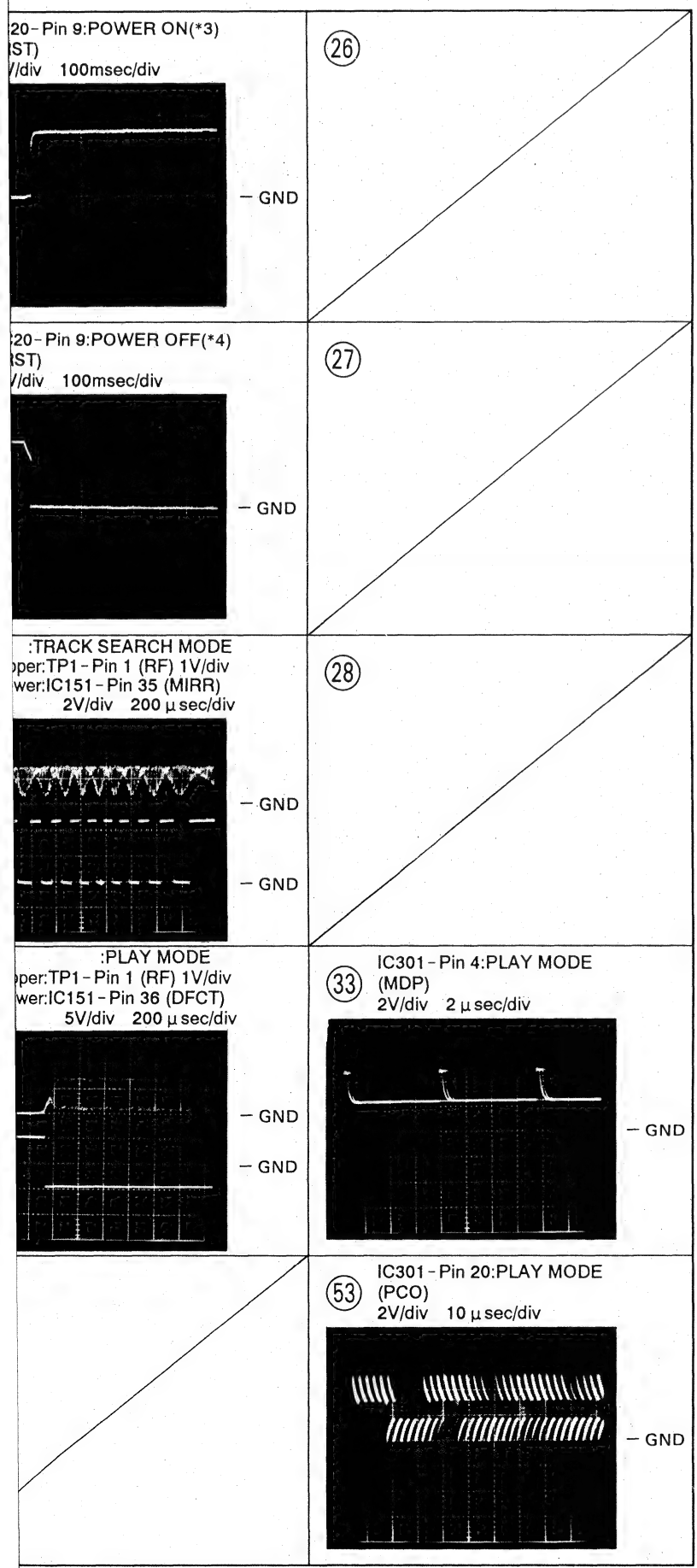
IC20: M5298P

● IC BLOCK DIAGRAMS

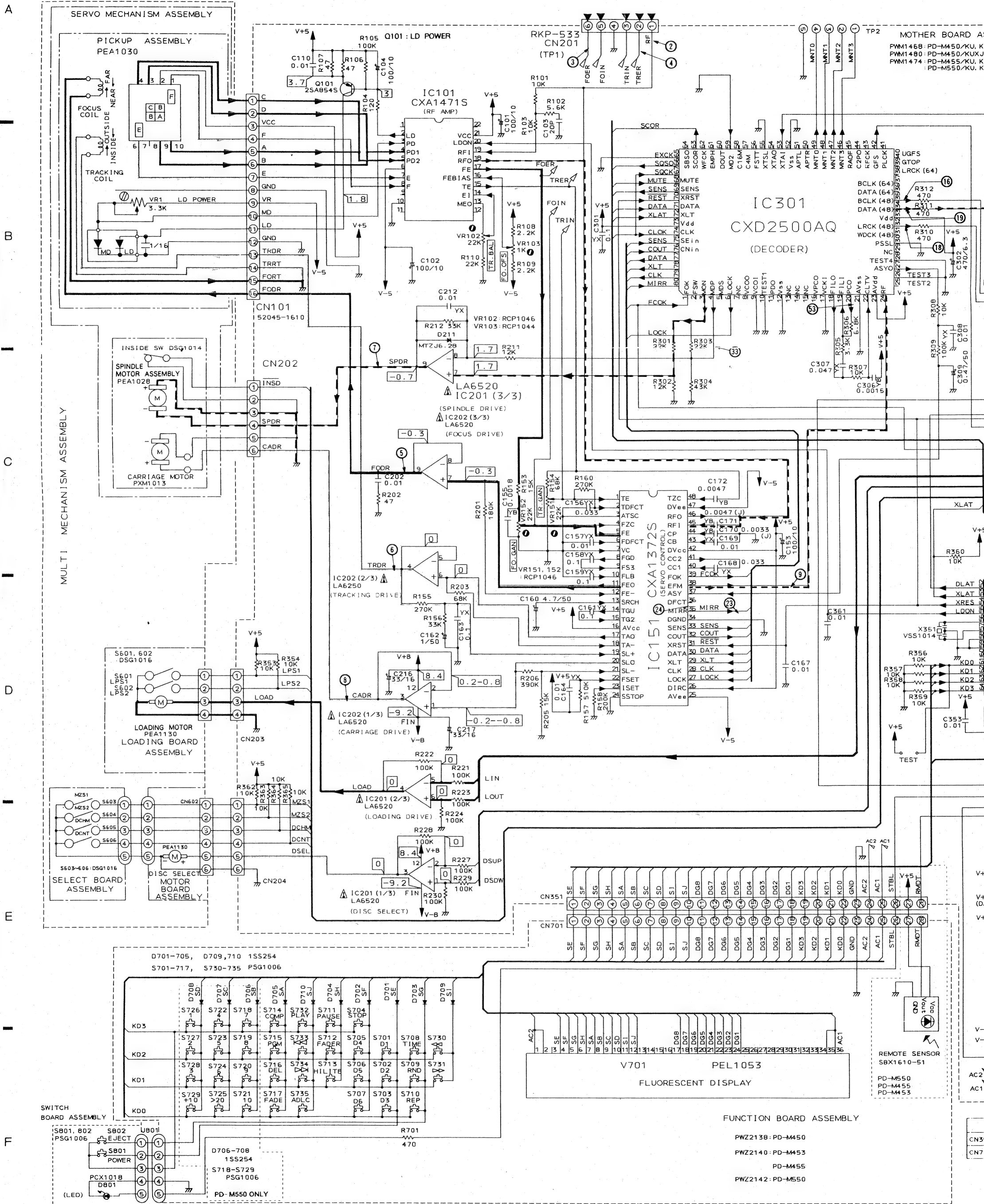
1. RESISTORS :
Indicated in Ω , 1/4W, 1/6W and 1/8W, $\pm 5\%$ tolerance unless otherwise noted k; k Ω ,
M; M Ω (F); $\pm 1\%$ (G); $\pm 2\%$ (K); $\pm 10\%$ (M); $\pm 20\%$ tolerance.
2. CAPACITORS :
Indicated in capacity(μ F)/voltage(V)unless otherwise noted p; pF. Indication without
voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT :
 :DC voltage(V)at play state.
 :DC current at play state.
Value in() is DC current at stop state.
4. OTHERS :
 :Signal route.
 :Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety
factor of the part. Therefore, when replacing, be sure to use parts of identical
designation.
※ marked capacitors and resistors have parts numbers.

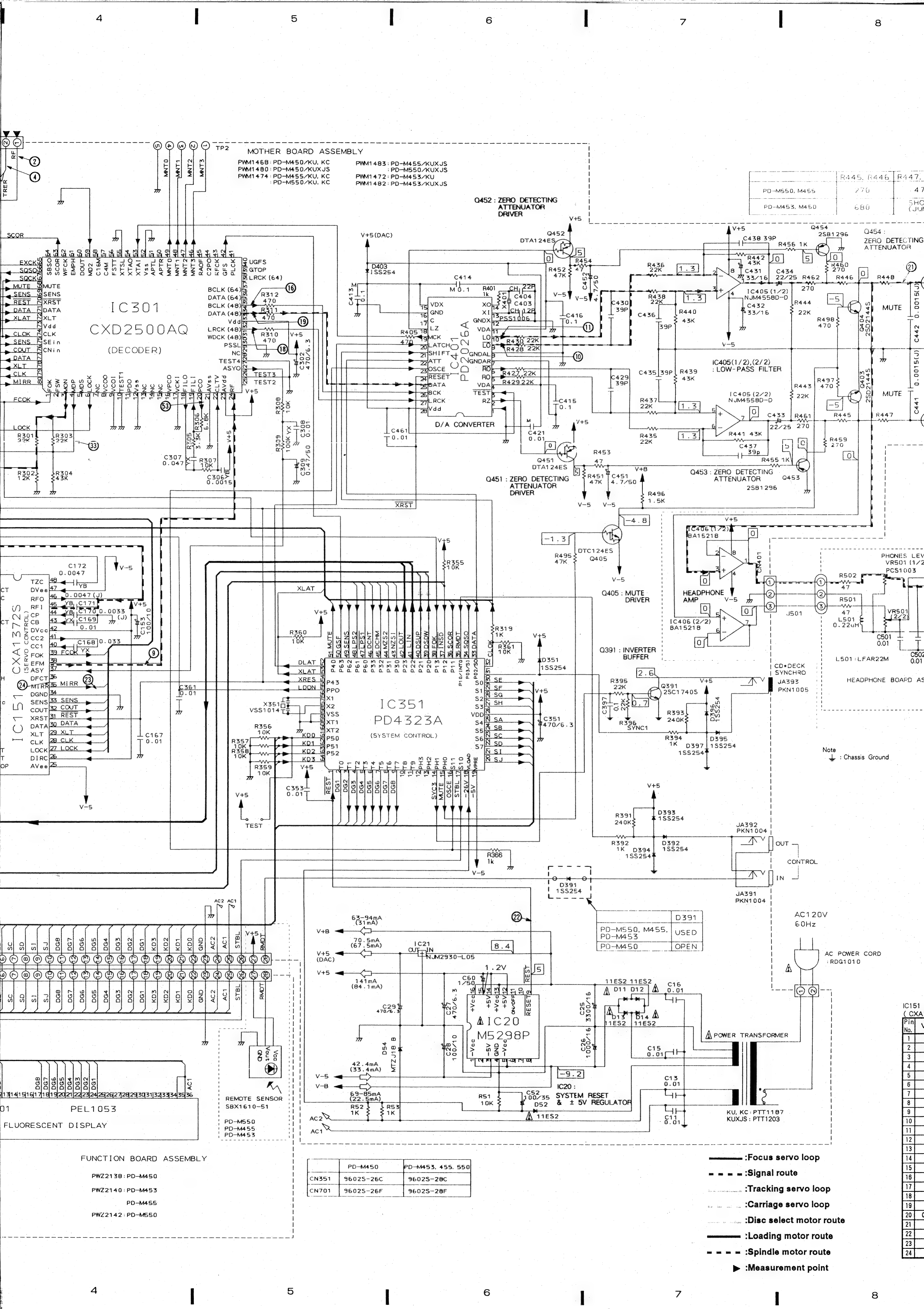
This is the basic schematic diagram, but the actual circuit may vary due to
improvements in design.

5. SWITCHES : (The underlined indicates the switch position)
- SWITCH BOARD ASSEMBLY
S801 : POWER ON — OFF
S802 : EJECT
- SERVO MECHANISM ASSEMBLY
INSIDE SWITCH
- LOADING BOARD ASSEMBLY
S601 : LPS1
S602 : LPS2
- SELECT BOARD ASSEMBLY
S603 : MZS1
S604 : MZS2
S605 : DCHM
S606 : DCNT
- FUNCTION BOARD ASSEMBLY
(PD - M550 TYPE)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S718 : 7
S719 : 8
S720 : 9
S721 : 10
S722 : 4
S723 : 5
S724 : 6
S725 : ≥ 20
S726 : 1
S727 : 2
S728 : 3
S729 : +10
S730 :] MANUAL SEARCH
S731 :]
S732 : PLAY
S733 :] TRACK SEARCH
S734 :]
S735 : ADLC
- FUNCTION BOARD ASSEMBLY
(PD - M455 , PD - M453 AND PD - M450 TYPES)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S730 :] MANUAL SEARCH
S731 :]
S732 : PLAY
S733 :] TRACK SEARCH
S734 :]
S735 : ADLC



5.2 SCHEMATIC DIAGRAM

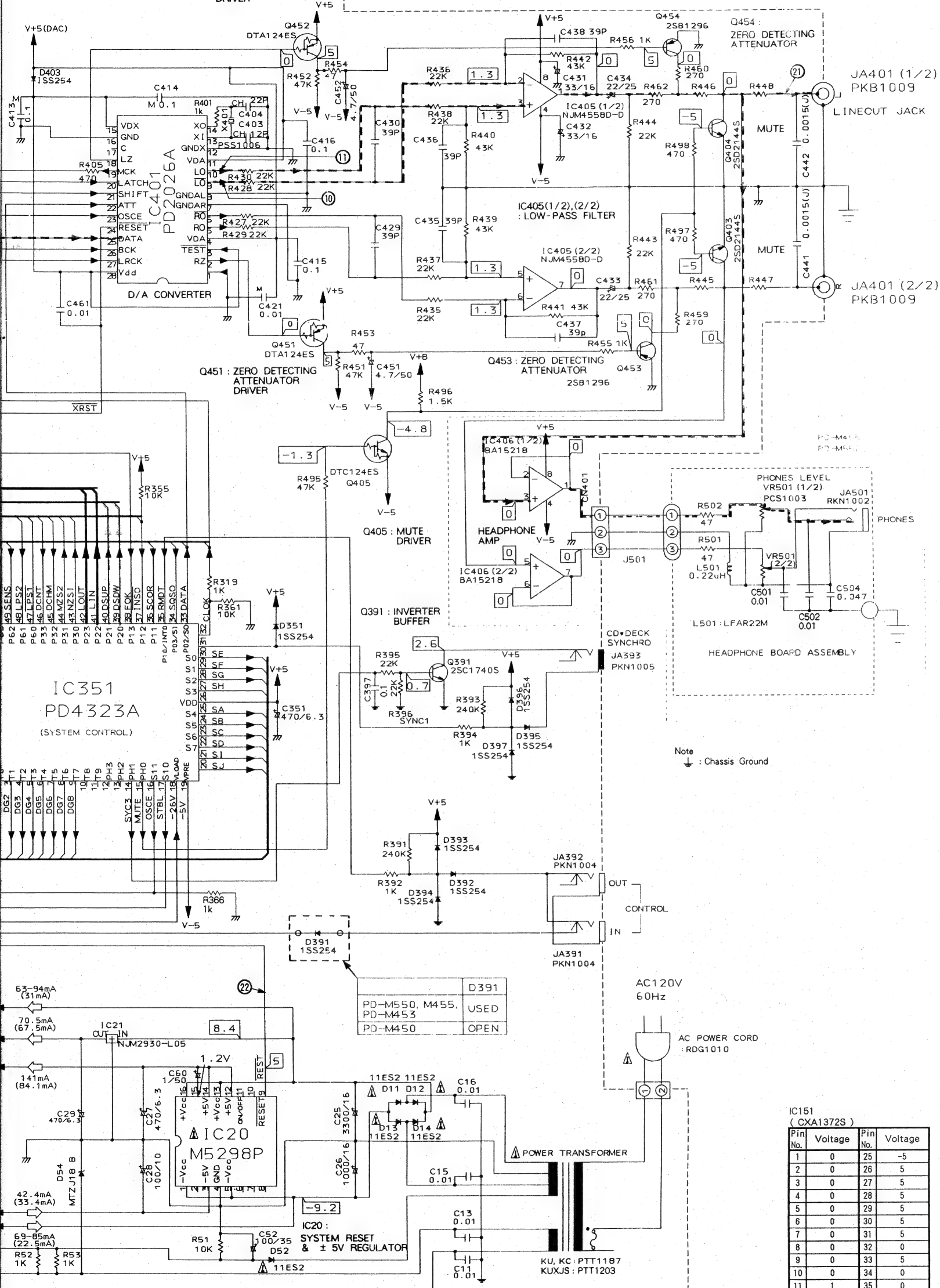




BLY

PWM1483: PD-M455/KUXJS
 PD-M550/KUXJS
 PWM1472: PD-M453/KU
 PWM1482: PD-M453/KUXJS

Q452: ZERO DETECTING
 ATTENUATOR
 DRIVER



IC401

(PD2026A)

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	0	16	0
3	5	17	5
4	5	18	0
5	2.4	19	2
6	2.6	20	5
7	0	21	5
8	0	22	5
9	2.6	23	5
10	2.4	24	5
11	5	25	2.4
12	0	26	2.4
13	2.4	27	2.4
14	2.4	28	5

IC101

(CXA1471S)

Pin No.	Voltage	Pin No.	Voltage
1	0	12	0
2	2.9	13	-0.9
3	-4.7	14	-0.7
4	0	15	0
5	0	16	0
6	-5	17	0
7	0	18	0.8
8	0	19	0
9	0	20	5
10	0	21	5
11	0	22	0

IC301

(CX02500AQ)

Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	0
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0-0.3
10	0	50	1.2
11	2.1	51	1.2
12	0	52	0
13	1	53	2.5
14	0.9-1.3	54	2.5
15	0	55	0
16	2	56	2.9
17	0	57	2.5
18	2.5	58	2.5
19	2.4	59	0
20	2.4	60	0
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	2.5	64	0
25	0.2	65	0
26	0	66	3.3-4.6
27	2.5	67	5
28	0	68	0
29	0	69	2.1-3
30	0	70	5
31	1.3-2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

IC351

(PD4323A)

Pin No.	Voltage	Pin No.	Voltage
1	5	33	5
2	-24	34	3.5-4.7
3	-24	35	5
4	-24	36	0
5	-24	37	5
6	-24	38	5
7	-24	39	0
8	-24	40	0
9	-24	41	0
10	-24	42	0
11	-26	43	0
12	0	44	0
13	0	45	0
14	5	46	0
15	5	47	0
16	5	48	0
17	0	49	0
18	-26	50	5
19	-5	51	0
20	1.2	52	5
21	-7.7	53	5
22	-6-10	54	5
23	-4-7.5	55	5
24	-4-7.5	56	2.5
25	-9.5-16.2	57	2.5
26	5	58	0
27	-26	59	0
28	-13-20	60	5
29	-16-20	61	0
30	-13-16	62	0
31	5	63	0
32	5	64	0

PD-M450	PD-M453, 455, 550
9602S-26C	9602S-28C
9602S-26F	9602S-28F

6. P. C. BOARDS CONNECTION DIAGRAM

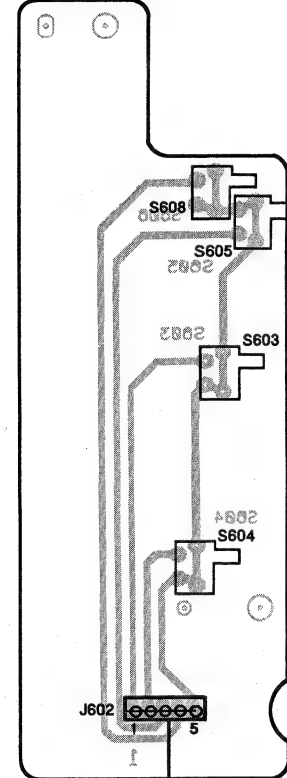
A

B

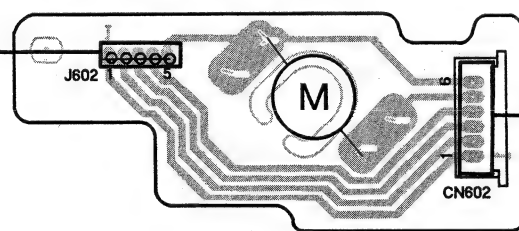
C

D

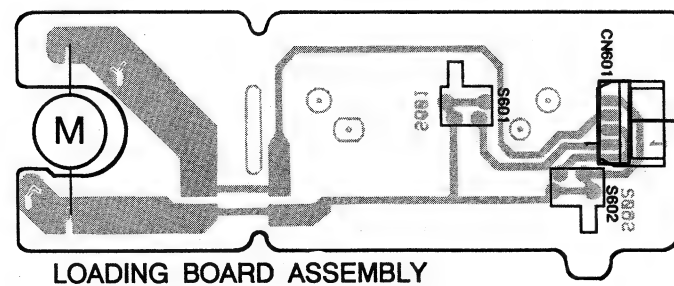
SELECT BOARD ASSEMBLY



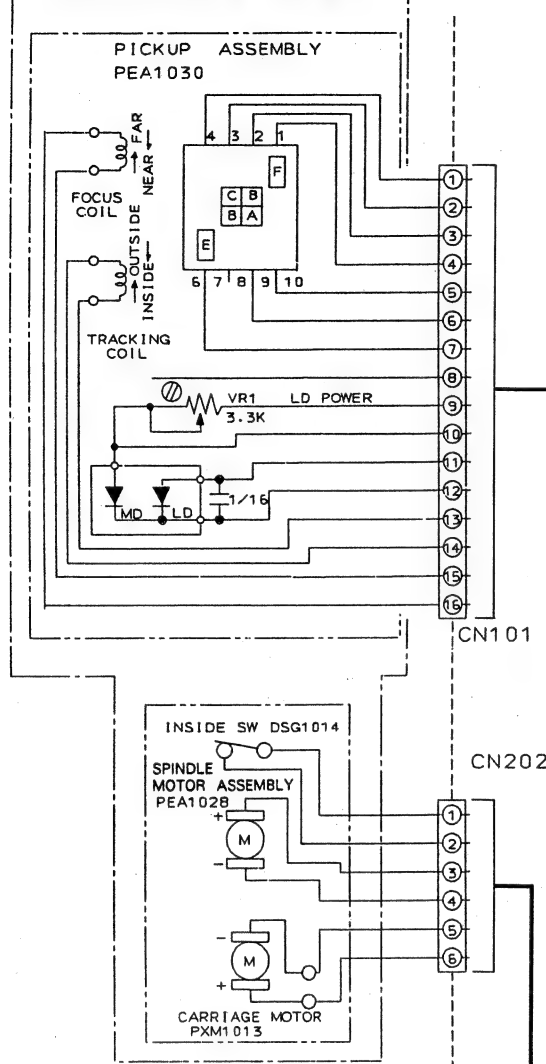
MOTOR BOARD ASSEMBLY



LOADING BOARD ASSEMBLY

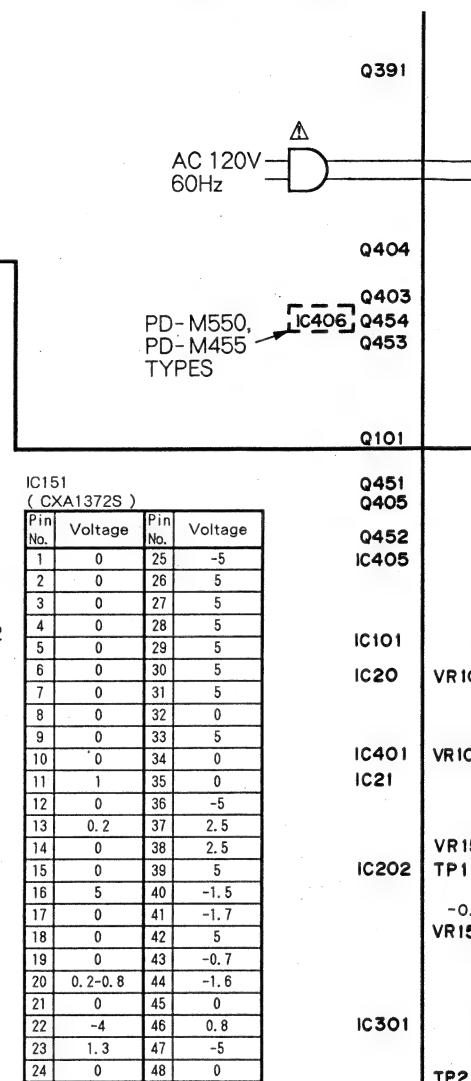


SERVO MECHANISM ASSEMBLY



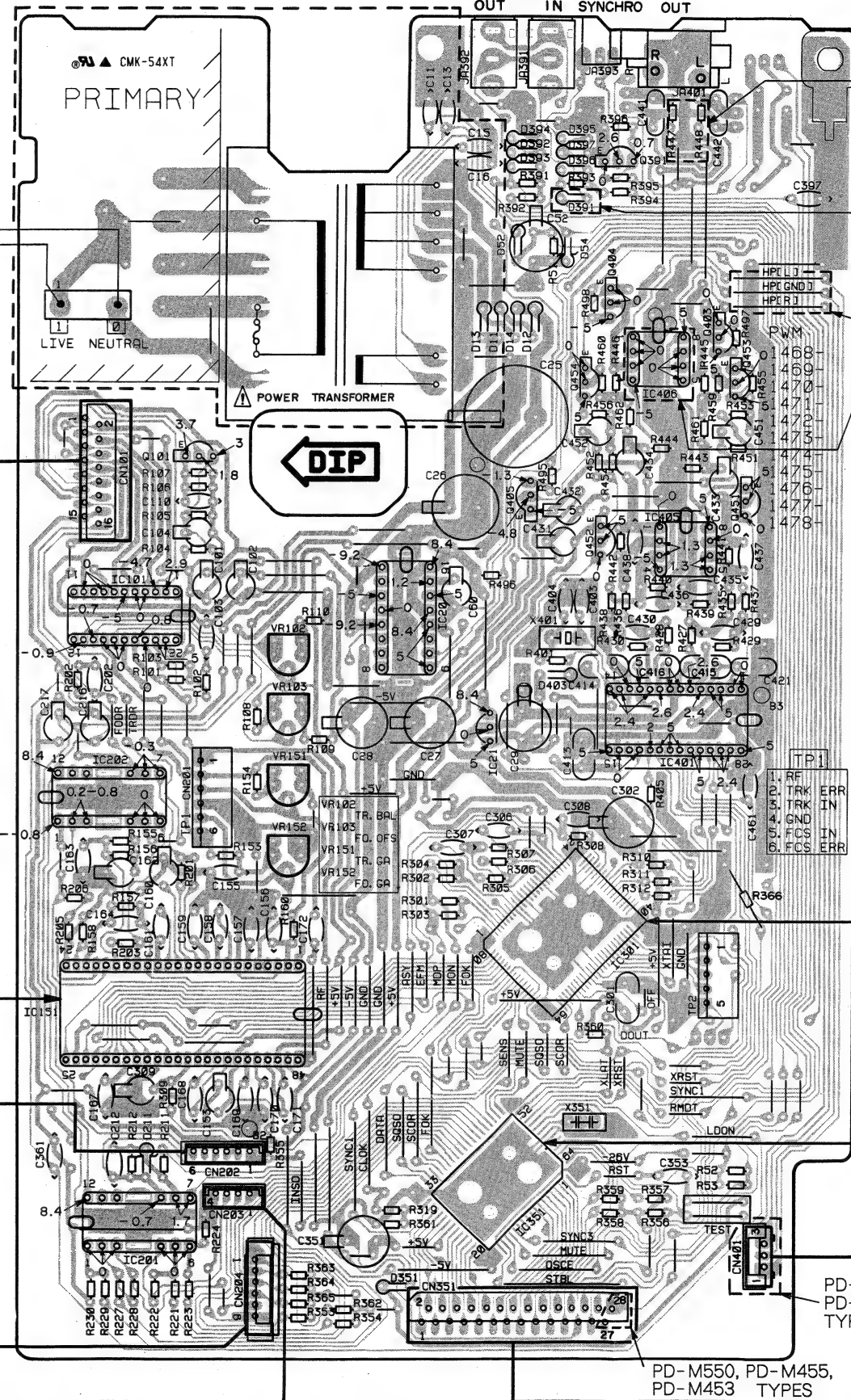
MOTHER BOARD ASSEMBLY

	KU	KUXJS
PD-M550	PWM1474	PWM1483
PD-M455	PWM1472	PWM1482
PD-M450	PWM1468	PWM1480



IC151 (CXA1372S)			
Pin No.	Voltage	Pin No.	Voltage
1	0	25	-5
2	0	26	5
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	5
10	0	34	0
11	1	35	0
12	0	36	-5
13	0.2	37	2.5
14	0	38	2.5
15	0	39	5
16	5	40	-1.5
17	0	41	-1.7
18	0	42	5
19	0	43	-0.7
20	0.2-0.8	44	-1.6
21	0	45	0
22	-4	46	0.8
23	1.3	47	-5
24	0	48	0

POWER SUPPLY SECTION For KU TYPE



PD-M550	R447, R448
PD-M455	USED
PD-M453	SHORT
PD-M450	(JUMPER)

PD-M550	D391
PD-M455	USED
PD-M453	
PD-M450	OPEN

PD-M550, PD-M455 TYPES

IC301 (CXD2500AQ)				IC351 (PD4323Z)			
Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5	1	5	1	5
2	2.1	42	5	2	-2	2	-2
3	5	43	2.5	3	-2	3	-2
4	2.6	44	0	4	-2	4	-2
5	2.2	45	5	5	-2	5	-2
6	5	46	4.4	6	-2	6	-2
7	0	47	0	7	-2	7	-2
8	5	48	0	8	-2	8	-2
9	0	49	0-0.3	9	-2	9	-2
10	0	50	1.2	10	-2	10	-2
11	2.1	51	1.2	11	-2	11	-2
12	0	52	0	12	0	12	0
13	1	53	2.5	13	0	13	0
14	0.9-1.3	54	2.5	14	5	14	5
15	0	55	0	15	5	15	5
16	2	56	2.9	16	5	16	5
17	0	57	2.5	17	0	17	0
18	2.5	58	2.5	18	-2	18	-2
19	2.4	59	0	19	-5	19	-5
20	2.4	60	0	20	1.2	20	1.2
21	0	61	0	21	-7	21	-7
22	2.5	62	2.5	22	-6	22	-6
23	5	63	0	23	-4	23	-4
24	2.5	64	0	24	-4	24	-4
25	0.2	65	0	25	-9.5	25	-9.5
26	0	66	3.3-4.6	26	5	26	5
27	2.5	67	5	27	-26	27	-26
28	0	68	0	28	-13	28	-13
29	0	69	2.1-3	29	-16	29	-16
30	0	70	5	30	-13	30	-13
31	1.3-2.2	71	5	31	5	31	5
32	2.5	72	5	32	5	32	5
33	5	73	5				
34	2.5	74	5				
35	2.5	75	5				
36	2.5	76	0				
37	2.5	77	5				
38	2.5	78	5				
39	0	79	5				
40	5	80	0				

PD-M550, PD-M455 TYPES

	CN351, CN70
PD-M550	28 Pin
PD-M455	
PD-M453	
PD-M450	26 Pin

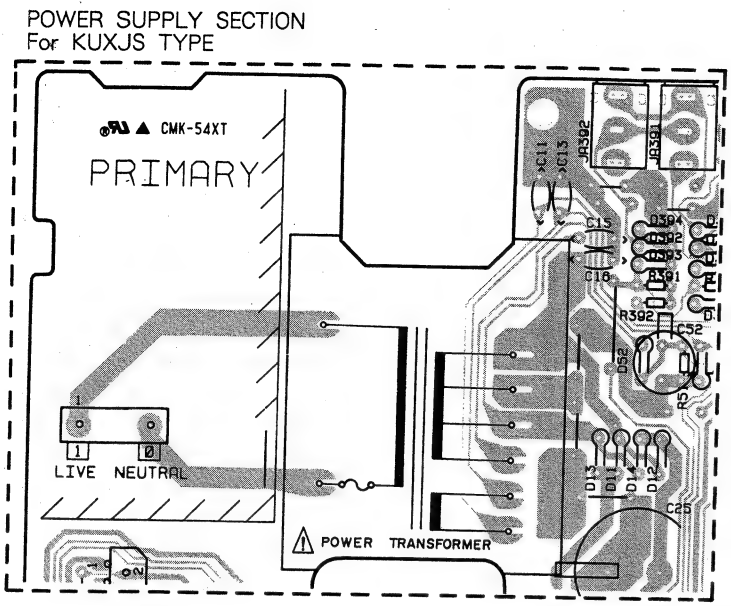
PD-M550, PD-M455, PD-M453 TYPES

POWER For KU

LIVE

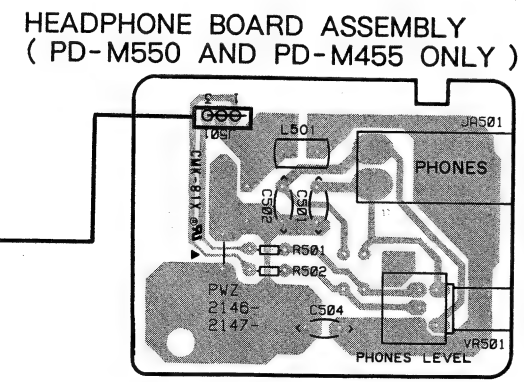
PD-M550	R447, R448
PD-M455	USED
PD-M453	SHORT
PD-M450	(JUMPER)

PD-M550	D391
PD-M455	USED
PD-M453	
PD-M450	OPEN

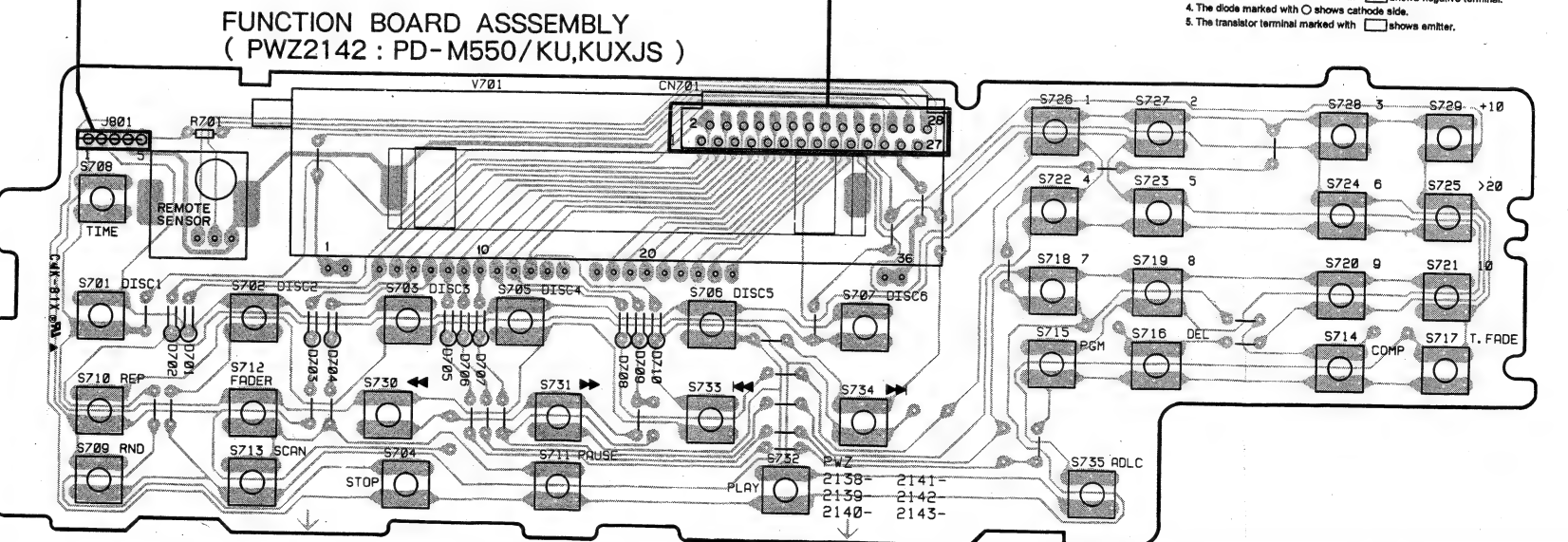
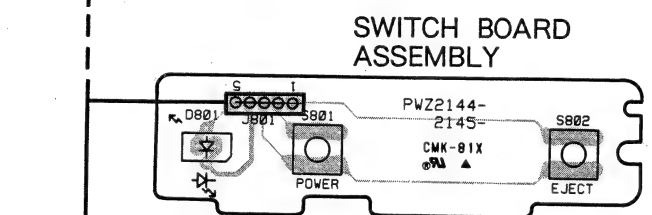
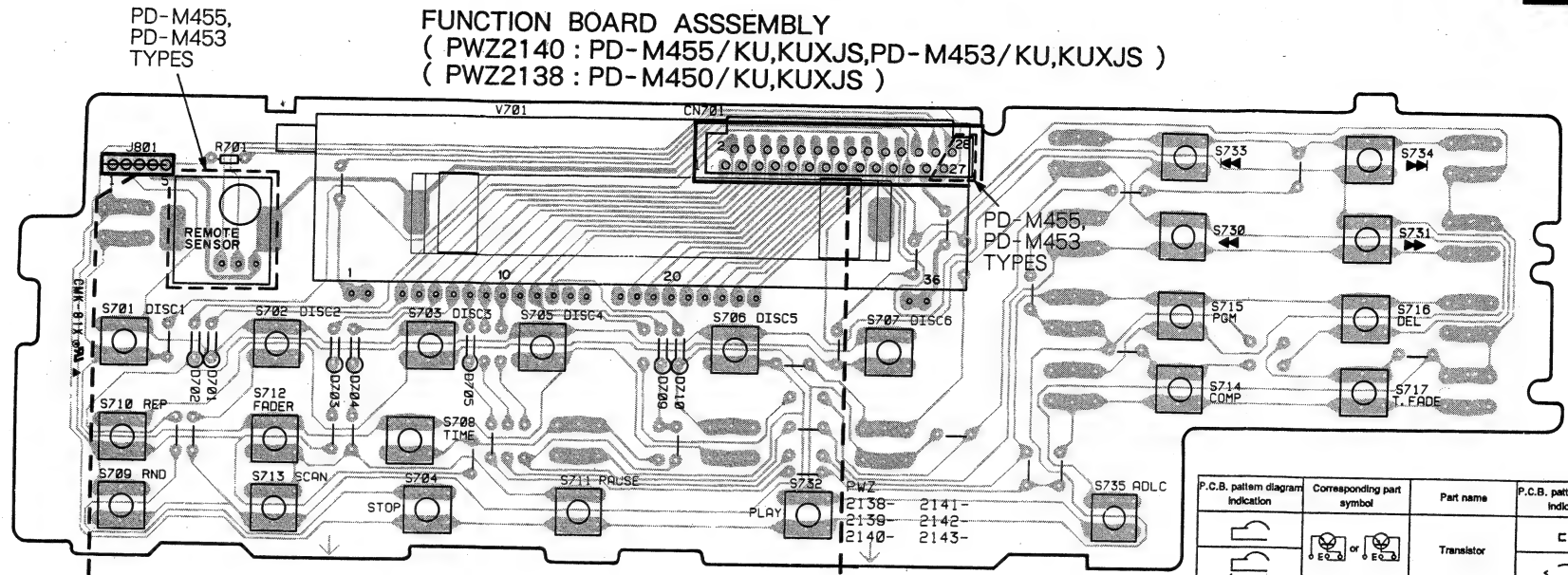


301 CXD2500AQ			
Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	0
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0-0.3
10	0	50	1.2
11	2.1	51	1.2
12	0	52	0
13	1	53	2.5
14	0.9-1.3	54	2.5
15	0	55	0
16	2	56	2.9
17	0	57	2.5
18	2.5	58	2.5
19	2.4	59	0
20	2.4	60	0
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	0.2	64	0
25	0	65	0
26	0	66	3.3-4.6
27	2.5	67	5
28	0	68	0
29	0	69	2.1-3
30	0	70	5
31	1.3-2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

IC351 (PD4323A)			
Pin No.	Voltage	Pin No.	Voltage
1	5	33	5
2	-24	34	3.5-4.7
3	-24	35	5
4	-24	36	0
5	-24	37	5
6	-24	38	5
7	-24	39	0
8	-24	40	0
9	-24	41	0
10	-24	42	0
11	-26	43	0
12	0	44	0
13	0	45	0
14	5	46	0
15	5	47	0
16	5	48	0
17	0	49	0
18	-26	50	5
19	-5	51	0
20	1.2	52	5
21	-7.7	53	5
22	-6-10	54	5
23	-4-7.5	55	5
24	-4-7.5	56	2.5
25	-9.5-16.2	57	2.5
26	5	58	0
27	-26	59	0
28	-13-20	60	5
29	-16-20	61	0
30	-13-16	62	0
31	5	63	0
32	5	64	0



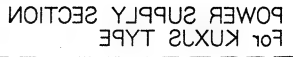
	CN351, CN701
PD-M550	28 Pin
PD-M455	
PD-M453	
PD-M450	26 Pin



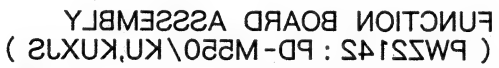
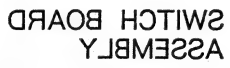
P.C.B. pattern diagram	Corresponding part	Part name	P.C.B. pattern diagram	Corresponding part	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Electrolytic capacitor (Non polarized)
		Zener diode			Electrolytic capacitor (Noiseless)
		LED			Electrolytic capacitor (Polarized)
		Varactor			Electrolytic capacitor (Polarized)
		Tact switch			Power capacitor
		Inductor			Semi-fixed resistor
		Coil			Resistor array
		Transformer			Resistor
		Filter			Resonator
					Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

2E2
-M425
-M250,

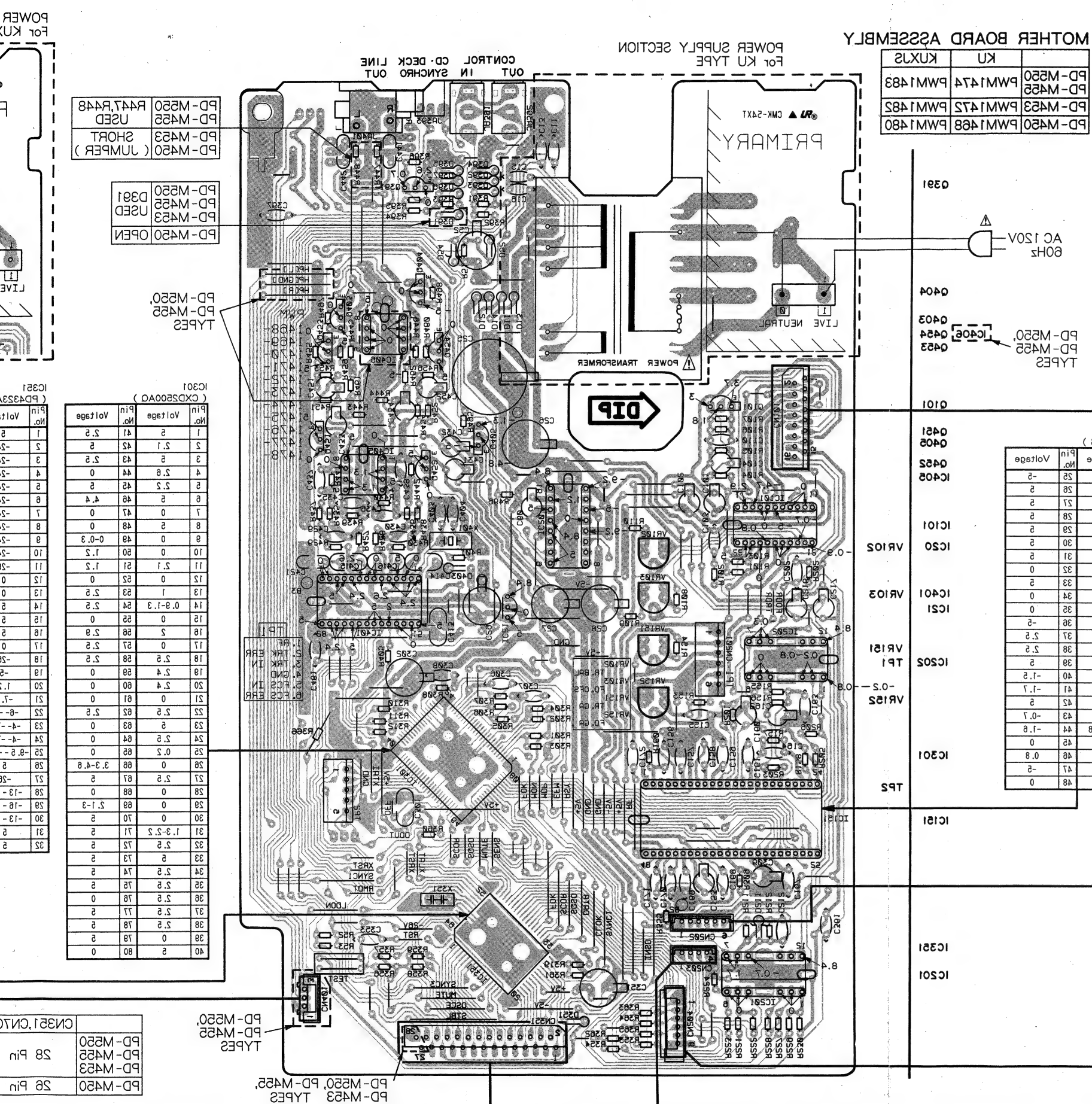
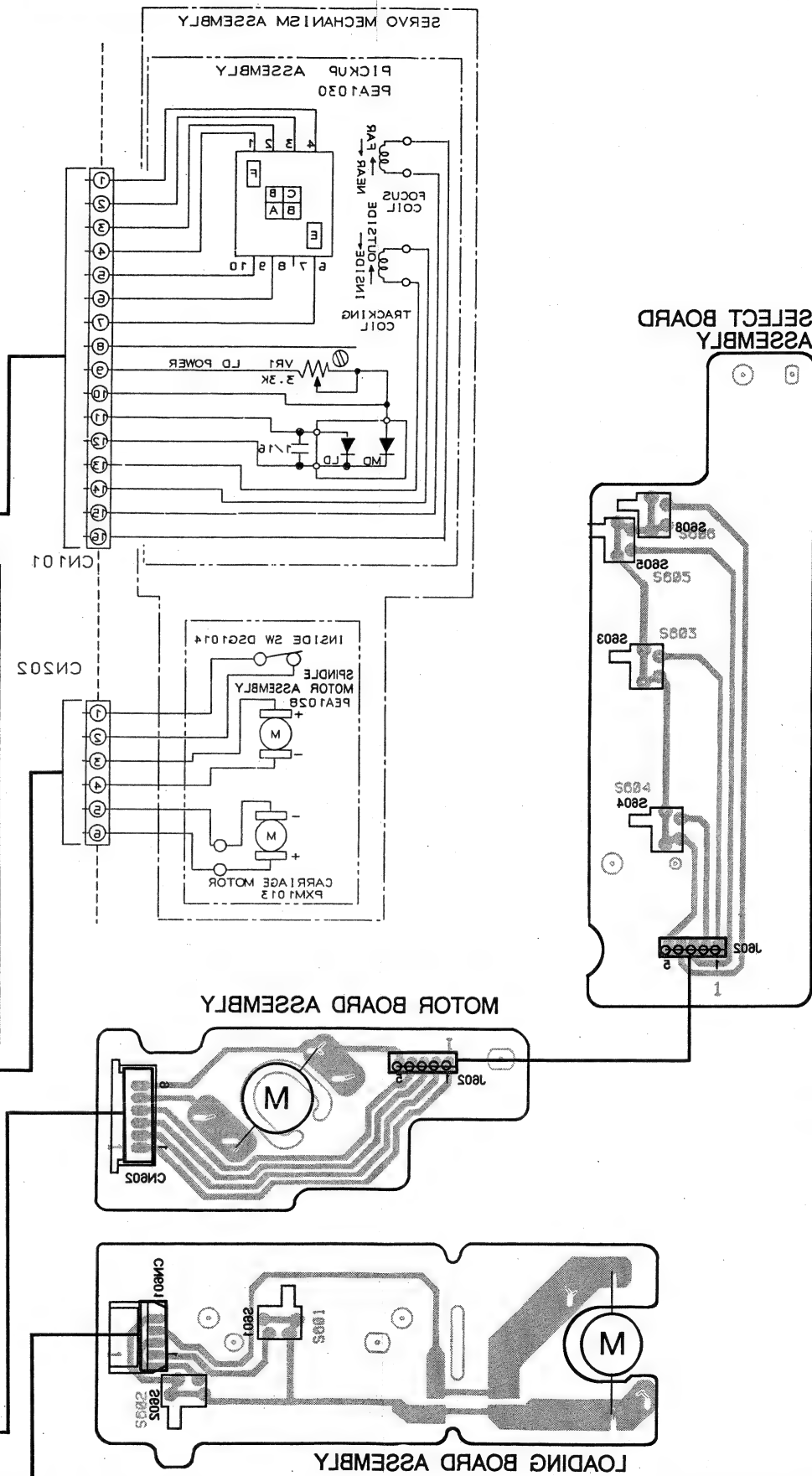


Pin	Volts	Pin	Volts
35	2	84	0
31	0	83	0
30	-13 - -18	85	0
29	-18 - -50	81	0
28	-13 - -50	80	0
27	-50	79	0
26	-2 - -18.5	78	0
25	-4 - -7.5	76	5.2
24	-4 - -7.5	75	2
23	-8 - -10	74	2
22	-1.7	73	2
20	-50	71	0
19	0	70	0
18	2	69	0
17	2	68	0
16	2	67	0
15	2	66	0
14	0	65	0
13	0	64	0
12	0	63	0
11	-50	61	0
10	-54	65	0
9	-54	67	2
8	-54	71	2
7	-54	73	2
6	-54	74	2
5	-54	75	2
4	-54	76	0
3	-54	78	2
2	-54	81	0
1	2	83	2



This P. C. B. connection diagram is viewed from the foil side.

E. P. C. BOARDS CONNECTION DIAGRAM



7. P. C. B's PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω \rightarrow 56 $\times 10^1 \rightarrow$ 561 RD1/4PS 561J

47k Ω \rightarrow 47 $\times 10^3 \rightarrow$ 473 RD1/4PS 473J

0.5 Ω \rightarrow 0R5 RN2H 0R5K

1 Ω \rightarrow 010 RSIP 010K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω \rightarrow 562 $\times 10^1 \rightarrow$ 5621 RN1/4SR 5621F

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
● MOTHER BOARD ASSEMBLY (PWM1474 For PD – M550 and PD – M455) (PWM1472 For PD – M453) (PWM1468 For PD – M450)					C153	ELECTR. CAPACITOR	CEAS101M10
					C155	CERAMIC CAPACITOR	CKCYB182K50
					C156	CERAMIC CAPACITOR	CGCYX333K25
					C157	CERAMIC CAPACITOR	CGCYX103K25
					C158, 159	CERAMIC CAPACITOR	CGCYX104K25
SEMICONDUCTORS					C16	CERAMIC CAPACITOR	CKCYF103Z50
	IC101	PRE AMP IC	CXA1471S		C160	ELECTR. CAPACITOR	CEAS4R7M50
	IC151	SERVO IC	CXA1372S		C161	CERAMIC CAPACITOR	CGCYX104K25
△	IC20	REGULATOR IC	M5298P		C162	ELECTR. CAPACITOR	CEAS010M50
△	IC201, 202	POWER OP-AMP, IC	LA6520		C163	CERAMIC CAPACITOR	CGCYX104K25
	IC21	REGULATOR, IC	NJM2930-L05		C164	CERAMIC CAPACITOR	CGCYX103K25
	IC301	EFM DEMODULATION IC	CXD2500AQ		C167	CERAMIC CAPACITOR	CKCYF103Z50
	IC351	MICROCOMPUTER, IC	PD4323A		C168	CERAMIC CAPACITOR	CGCYX333K25
	IC401	D/A CONVERTER, IC	PD2026A		C169	CERAMIC CAPACITOR	CGCYX103K25
	IC405	OP-AMP IC	NJM4558D-D		C170	CERAMIC CAPACITOR	CKCYB332K50
	IC406	OP-AMP IC (PWM1474 only)	BA15218		C171, 172	CERAMIC CAPACITOR	CKCYB472K50
	Q101	TRANSISTOR	2SA854S		C202	CERAMIC CAPACITOR	CKCYF103Z50
	Q391	TRANSISTOR	2SC1740S		C21	MYLOR FILM CAPACITOR	CQMA104K50
	Q403, 404	TRANSISTOR	2SD2144S		C212	CERAMIC CAPACITOR	CGCYX103K25
	Q405	TRANSISTOR	DTC124ES		C216, 217	ELECTR. CAPACITOR	CEAS330M16
	Q451, 452	TRANSISTOR	DTA124ES		C25	ELECTR. CAPACITOR	CEAS332M16
	Q453, 454	TRANSISTOR	2SB1296		C26	ELECTR. CAPACITOR	CEAS102M16
△	D11-14	DIODE	11ES2		C27	ELECTROLYTIC CAPACIT	CEAS471M6R3
	D211	ZENNER DIODE	MTZJ6.2B		C28	ELECTR. CAPACITOR	CEAS101M10
	D351	DIODE	1SS254		C29	ELECTROLYTIC CAPACIT	CEAS471M6R3
	D391	DIODE	1SS254		C301	CERAMIC CAPACITOR	CGCYX104K25
		(PWM1474 and PWM1472 only)			C302	ELECTROLYTIC CAPACIT	CEAS471M6R3
	D392-397	DIODE	1SS254		C306	CERAMIC CAPACITOR	CKCYB152K50
	D403	DIODE	1SS254		C307	CERAMIC CAPACITOR	CGCYX473K25
△	D52	DIODE	11ES2		C308	CERAMIC CAPACITOR	CGCYX103K25
	D54	ZENNER DIODE	MTZJ18B		C309	ELECTR. CAPACITOR	CEASR47M50
CAPACITORS					C351	ELECTROLYTIC CAPACIT	CEAS471M6R3
	C101, 102	ELECTR. CAPACITOR	CEAS101M10		C353, 361	CERAMIC CAPACITOR	CKCYF103Z50
	C103	CERAMIC CAPACITOR	CCCCH200J50		C397	MYLOR FILM CAPACITOR	CQMA104K50
	C104	ELECTR. CAPACITOR	CEAS101M10		C403	CERAMIC CAPACITOR	CCCCH120J50
	C11, 110	CERAMIC CAPACITOR	CKCYF103Z50		C404	CERAMIC CAPACITOR	CCCCH220J50
	C13, 15	CERAMIC CAPACITOR	CKCYF103Z50		C413-416	MYLOR FILM CAPACITOR	CQMA104K50
					C421	MYLOR FILM CAPACITOR	CQMA103K50
					C429, 430	CERAMIC CAPACITOR	CCCCH390J50
					C431, 432	ELECTR. CAPACITOR	CEAS330M16

Mark	No.	Description	Part No.
	C433, 434	ELECTR. CAPACITOR	CEAS220M25
	C435-438	CERAMIC CAPACITOR	CCCCH390J50
	C441, 442	MYLOR FILM CAPACITOR	CQMA152J50
	C451, 452	ELECTR. CAPACITOR	CEAS4R7M50
	C461	CERAMIC CAPACITOR	CKCYF103Z50
	C52	ELECTR. CAPACITOR	CEAS101M35
	C60	ELECTR. CAPACITOR	CEAS010M50

RESISTORS

VR102	VR(22k)	VRTB6VS223
VR103	VR(1k)	VRTB6VS102
VR151, 152	VR(22k)	VRTB6VS223
	Other resistors	RD1/6PM□□□J

OTHERS

X351	CERAMIC RESONATOR	VSS1014
X401	XTAL RES (OSC)	PSS1006
CN101	CONNECTOR	52045-1610
CN351	CONNECTOR	9602S-28C
	(PWM1474 and PWM1472 only)	
CN351	CONNECTOR (PWM1468 only)	9602S-26C
CN401	3P JUMPER CONNECTOR	Non supply
	(PWM1474 only)	
JA391, 392	JACK/12V	PKN1004
	(CONTROL (IN, OUT))	
JA393	JACK (CD-DECK SYNCHRO)	PKN1005
JA401	JACK (LINE OUT (L, R))	PKB1009

LOADING BOARD ASSEMBLY

SWITCHES

S601, 602	PUSH SWITCH	DSG1016
	(LPS (1, 2))	

SELECT BOARD ASSEMBLY

SWITCHES

S603-606	PUSH SWITCH	DSG1016
	(MZS (1, 2), DCHM, DCNT)	

MOTOR BOARD ASSEMBLY

There is not supplied parts in this assembly.

◎ FUNCTION BOARD ASSEMBLY

- (PWZ2142 For PD - M550)
- (PWM2140 For PD - M455 and PD - M453)
- (PWM2138 For PD - M450)

SEMICONDUCTORS

D701-705	DIODE	1SS254
D706-708	DIODE (PWZ2142 only)	1SS254
D709, 710	DIODE	1SS254

Mark	No.	Description	Part No.
------	-----	-------------	----------

SWITCHES

S701-735	SWITCH (PWZ2142 only)	PSG1006
	(DISC1, DISC2, DISC3, STOP, DISC4, DISC5, DISC6, TIME, RANDOM PLAY, REPEAT, PAUSE, AUTO FADER, HI-LITE SCAN, COMPU PGM, PGM, DELETE, TIME FADE, 7-10, 4-6, ≥ 20, 1-3, +10, MANUAL SEARCH(<<1, >>), PLAY, TRACK SEARCH(<<<1, >>>), ADLC)	

S701-717	SWITCH	PSG1006
	(PWZ2140 and PWZ2138 only)	
	(DISC1, DISC2, DISC3, STOP, DISC4, DISC5, DISC6, TIME, RANDOM PLAY, REPEAT, PAUSE, AUTO FADER, HI-LITE SCAN, COMPU PGM, PGM, DELETE, TIME FADE)	

S730-735	SWITCH	PSG1006
	(PWZ2140 and PWZ2138 only)	
	(MANUAL SEARCH(<<1, >>), PLAY, TRACK SEARCH(<<<1, >>>), ADLC)	

RESISTOR

R701	CARBON FILM RESISTOR	RD1/6PM471J
------	----------------------	-------------

OTHERS

CN701	CONNECTOR	9602S-28F
	(PWZ2142 and PWZ2140 only)	
CN701	CONNECTOR	9602S-26F
	(PWZ2138 only)	
V701	FL INDICATOR TUBE	PEL1053
	REMOTE SENSOR	SBX1610-51
	(PWZ2142 only)	

SWITCH BOARD ASSEMBLY

SEMICONDUCTOR

D801	LED	PCX1018
------	-----	---------

SWITCHES

S801, 802	SWITCH	PSG1006
	(POWER, EJECT)	

HEADPHONE BOARD ASSEMBLY

(For PD - M550 and PD - M455 only)

COIL

L501	RADIAL INDUCTOR	LFAR22M
------	-----------------	---------

CAPACITORS

C501, 502	CERAMIC CAPACITOR	CKCYF103K50
C504	CERAMIC CAPACITOR	CKCYF473Z50

RESISTORS

VR501	VARIABLE RESISTOR	PCS1003
R501, 502	CARBON FILM RESISTOR	RD1/6PM470J

OTHERS

JA501	JACK (PHONES)	RKN1002
-------	-----------------	---------

8. ADJUSTMENTS

8.1. Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

● Adjustment Items/Verification Items and Order

Step	Item	Test Point	Adjustment Location
1	Focus offset adjustment	TP1, Pin 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Grating adjustment	TP1, Pin 2 (TRK. ERR)	Grating adjustment slit
3	Tracking error balance adjustment	TP1, Pin 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
5	RF level adjustment	TP1, Pin 1 (RF)	VR1 (RF level)
6	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Focus error signal verification	TP1, Pin 6 (FCS. ERR)	—————

● Abbreviation table

FCS. ERR	:Focus Error
FCS. OFS	:Focus Offset
TRK. ERR	:Tracking Error
TRK. BAL	:Tracking Balance
FCS. GAN	:Focus Gain
TRK. GAN	:Tracking Gain
FCS. IN	:Focus In
TRK. IN	:Tracking In

● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low-pass filter ($39\text{ k}\Omega + 0.001\text{ }\mu\text{F}$)
5. Resistor ($100\text{ k}\Omega$)
6. Standard tools

● Test Point and Adjustment Variable Resistor Positions

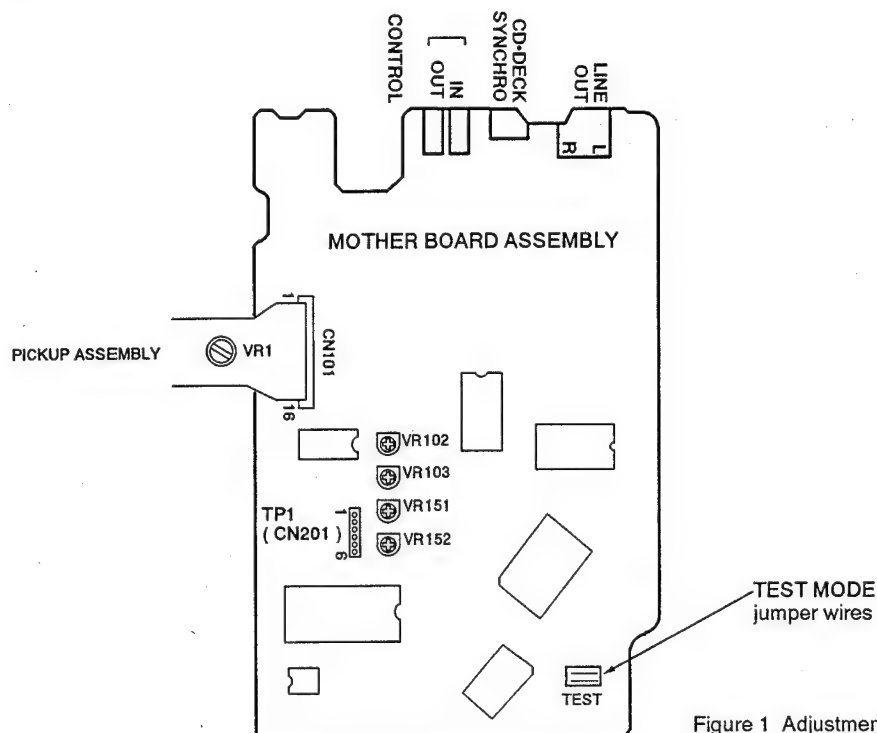


Figure 1 Adjustment Locations

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 - 3.

[Release from test mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

[Operations of the keys in test mode]

Code	Key Name	Function in Test Mode	Explanation
	PGM (PROGRAM)	Focus servo close	<p>The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo.</p> <p>If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised twice and returned to its original position.</p>
▷	PLAY	Spindle servo ON	<p>Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop.</p> <p>Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed.</p> <p>If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.</p>
□□	PAUSE	Tracking servo close/open	<p>Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal.</p> <p>If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem.</p> <p>This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.</p>

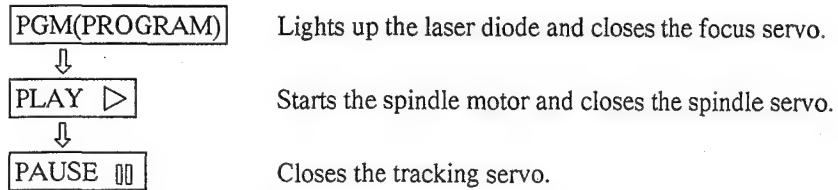
Code	Key Name	Function In Test Mode	Explanation
◀◀	MANUAL SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
▶▶	MANUAL SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
□	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed.
△	EJECT	CD magazine eject	Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.

Note : When inserting the magazine, disc 1 of the magazine is loaded automatically.

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.

Here is the key operation sequence for playing back a disc in test mode.



Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Adjustment

● Objective	Sets the DC offset for the focus error amp.		
● Symptom when out of adjustment	The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR)	● Player state	Test mode, stopped (just the Power switch on)
	[Settings] 5 mV/division 10 ms/division DC mode	● Adjustment location	VR103 (FCS. OFS)
		● Disc	None needed

[Procedure]

Adjust VR103 (FCS. OFS) so that the DC voltage at TP1, Pin 6 (FCS. ERR) is -150 ± 50 mV.

2. Grating Adjustment

● Objective	To align the tracking error generation laser beam spots to the optimum angle on the track.		
● Symptom when out of adjustment	Play does not start, track search is impossible, tracks are skipped.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR) via a low pass filter. (See Figure 2)	● Player state	Test mode, focus and spindle servos closed and tracking servo open
	[Settings] 50 mV/division 5 ms/division DC mode	● Adjustment location	Pickup grating adjustment slit
		● Disc	YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35mm) with the MANUAL SEARCH FWD $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ key.
2. Press the PGM (PROGRAM) key, then the PLAY \triangleright key in that order to close the focus servo then the spindle servo.
3. Insert an ordinary screwdriver into the grating adjustment slit and adjust the grating to find the null point. For more details, see the next page.
4. If you slowly turn the screwdriver clockwise from the null point, the amplitude of the wave gradually increases, then if you continue turning the screwdriver, the amplitude of the wave becomes smaller again. Turn the screwdriver clockwise from the null point and set the grating to the first point where the wave amplitude reaches its maximum.

Reference : Figure 3 shows the relation between the angle of the tracking beam with the track and the waveform.

Note : The amplitude of the tracking error signal is about 3 Vp-p (when a $39\text{ k}\Omega + 0.001\text{ }\mu\text{F}$ low pass filter is used). If this amplitude is extremely small (2 Vp-p or less), the objective lens or the pickup malfunction may be the cause. If the difference between the amplitude of the error signal at the innermost edge and outermost edge of the disc is more than 10%, the grating is not adjusted to the optimum point, so adjust it again.

5. Return the pickup to more or less midway across the disc with the MANUAL SEARCH REV $\triangleleft\triangleleft$ key, press the PAUSE \square key and double check that the track number and elapsed time are displayed on the front panel. If they are not displayed at this time or the elapsed time changes irregularly, double check the null point and adjust the grating again.

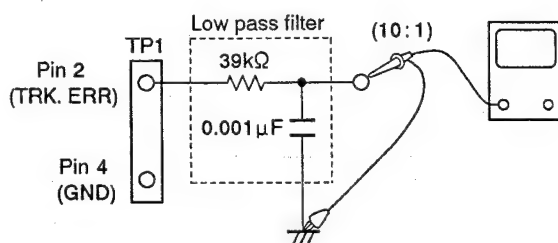
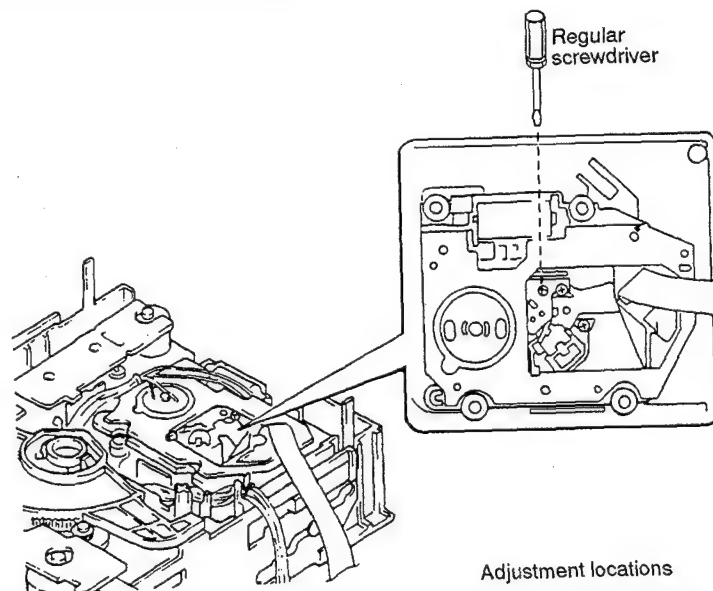


Figure 2



[How to find the null point]

When you insert the regular screwdriver into the slit for the grating adjustment and change the grating angle, the amplitude of the tracking error signal at TP1, Pin 2 changes. Within the range for the grating, there are five or six locations where the amplitude of the wave reaches a minimum. Of these five or six locations, there is only one at which the envelope of the waveform is smooth. This location is where the three laser beams divided by the grating are all right above the same track. (See Figure 3.)

This point is called the null point. When adjusting the grating, this null point is found and used as the reference position.

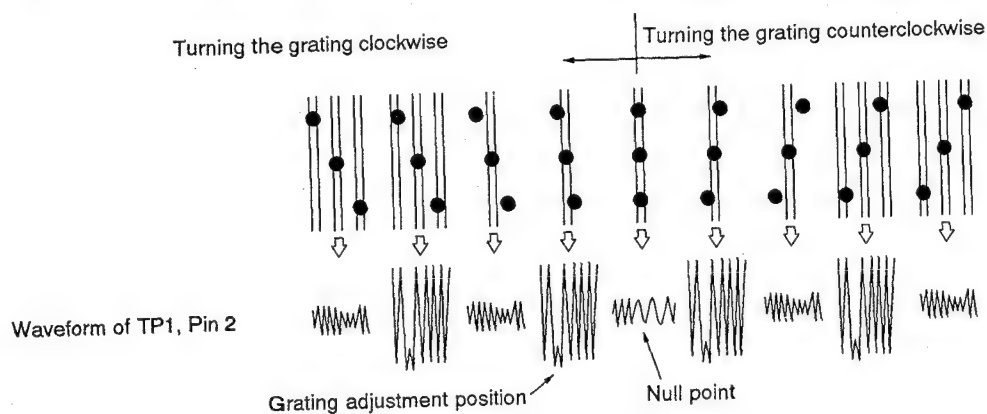
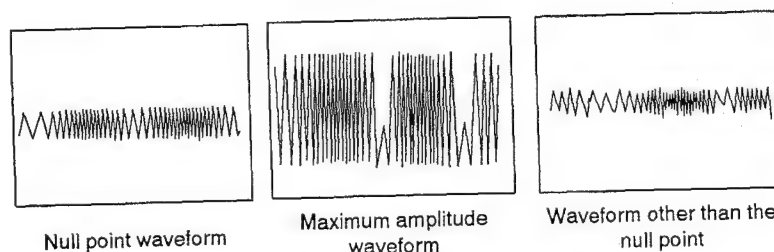


Figure 3

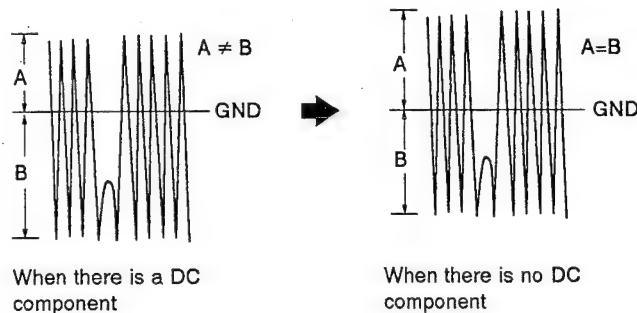


3. Tracking Error Balance Adjustment

● Objective	To correct for the variation in the sensitivity of the tracking photodiode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter.	● Player state	Test mode, focus and spindle servos closed and tracking servo open
	[Settings] 50 mV/division 5 ms/division DC mode	● Adjustment location	VR102 (TRK. BAL)
		● Disc	YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ key.
2. Press the PGM (PROGRAM) key, then the PLAY \triangleright key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR102 (TRK. BAL) so that the positive amplitude and negative amplitude of the tracking error signal at TP1, Pin 2 (TRK. ERR) are the same (in other words, so that there is no DC component).



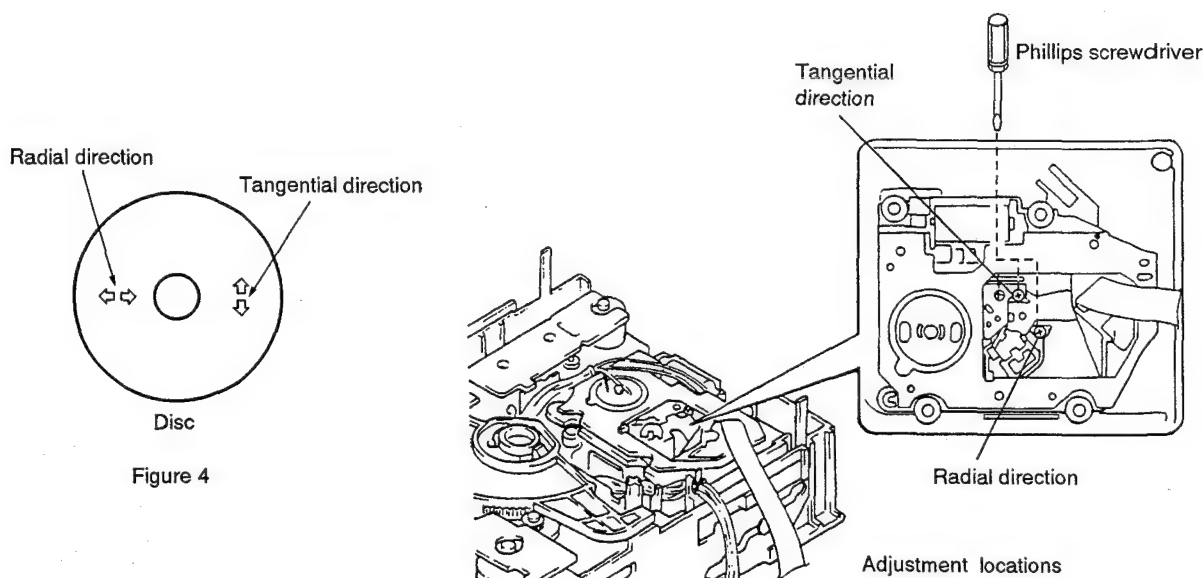
4. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken; some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pickup radial tilt adjustment screw and tangential tilt adjustment screw YEDS-7

[Procedure]

1. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35mm). Press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE || key in that order to close the focus servo then the spindle servo and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 5).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.

Note: Radial and tangential mean the directions relative to the disc shown in Figure 4.



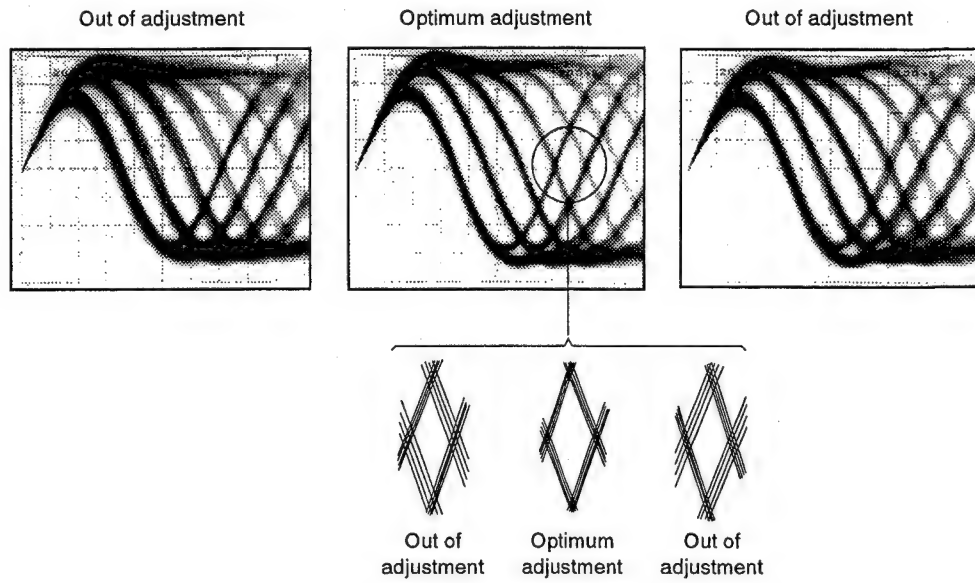


Figure 5 Eye pattern

5. RF Level Adjustment

● Objective	To optimize the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TPI, Pin 1 (RF).	● Player state	Test mode, play
	[Settings] 50 mV/division 10 ms/division AC mode	● Adjustment location	VR1(laser power)
		● Disc	YEDS-7
<div>[Procedure]</div> <div>1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key, then press the PGM (PROGRAM) key, then the PLAY ▷ key in that order to close the respective servos and put the player into play mode.</div> <div>2. Adjust VR1 (laser power) so that the RF signal amplitude is 1.2 Vp-p ± 0.1 V.</div>			

6. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 6.	● Player state	Test mode, play
	[Settings]	● Adjustment location	VR152 (FCS. GAN)
	CH1 20 mV/division X-Y mode	● Disc	YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the MANUAL SEARCH FWD $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY \triangleright key, then the PAUSE $\square\square$ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

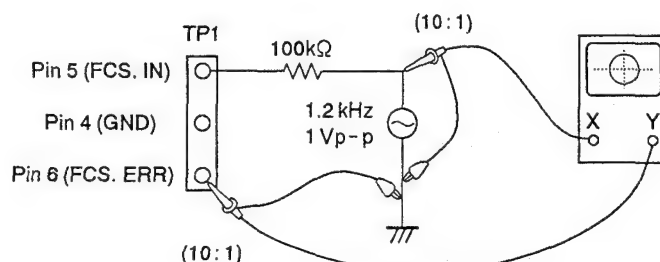
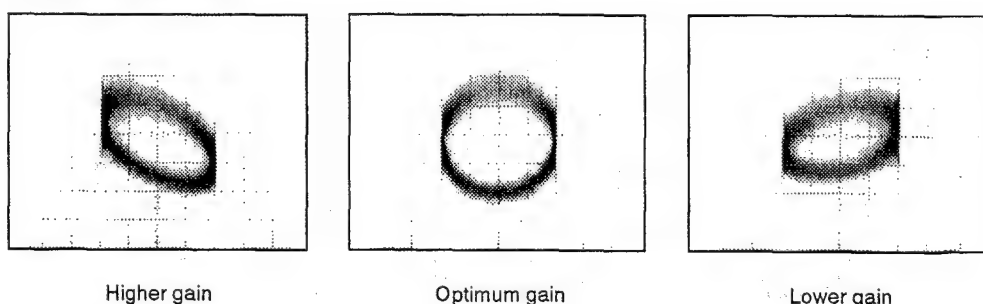


Figure 6

Focus Gain Adjustment



7. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 7.	● Player state	Test mode, play
	[Settings] CH1 CH2 50 mV/division 50 mV/division X–Y mode	● Adjustment location	VR151 (TRK. GAN)
		● Disc	YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the MANUAL SEARCH FWD >> or REV << key to move the pickup to halfway across the disc (R=35 mm), then press the PGM(PROGRAM) key, the PLAY > key, then the PAUSE || key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

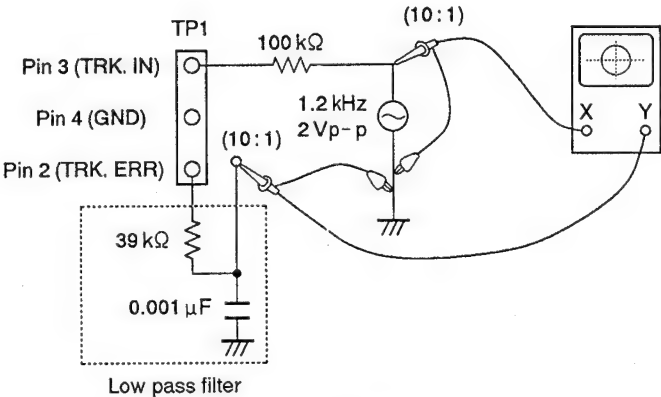
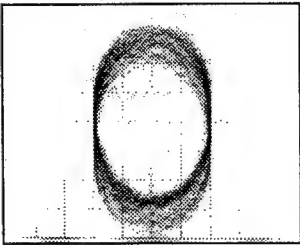


Figure 7

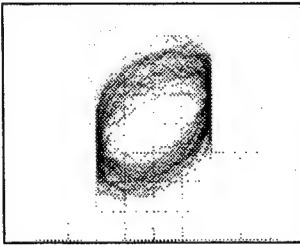
Tracking Gain Adjustment



Higher gain



Optimum gain



Lower gain

8. Focus Error Signal (Focus S Curve) Verification

● Objective	To judge whether the pickup is ok or not by observing the focus error signal. The pickup is judged from the amplitude of the tracking error signal (as discussed in the section on adjusting the tracking error balance) and the waveform for the focus error signal.		
● Symptom when out of adjustment			
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR). [Settings] 100 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stop None YEDS-7

[Procedure]

1. Connect TP1 Pin 5 to ground.
2. Mount the disc.
3. While watching the oscilloscope screen, press the PGM (PROGRAM) key and observe the waveform in Figure 8 for a moment. Verify that the amplitude is at least 2.5 Vp-p and that the positive and negative amplitude are about equal. Since the waveform is only output for a moment when the PGM (PROGRAM) key is pressed, press this key over and over until you have checked the waveform.

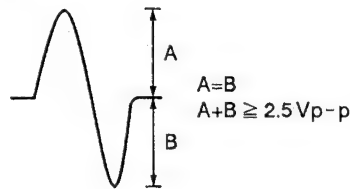


Figure 8

[Judging the pickup]

Do not judge the pickup until all the adjustment have been made correctly. In the following cases, there may be something wrong with the pickup.

1. The tracking error signal amplitude is extremely small (less than 2 Vp-p).
2. The focus error signal amplitude is extremely small (less than 2.5 Vp-p).
3. The positive and negative amplitudes of the focus error signal are extremely asymmetrical (2 : 1 ratio or more).
4. The RF signal is too small (less than 0.8 Vp-p) and even if VR1 (laser power) is adjusted, the RF signal can not be brought up to the standard level.

8. RÉGLAGES

8.1 Méthodes de Réglage

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie en présentent aucune anomalie. Par conséquent, ajuster le lecteur correctement en suivant les démarches de réglage.

● Points de Réglage/Point et Ordre de Vérification

Etape	Point	Point d'Essai	Emplacement du Réglage
1	Réglage du décalage de la mise au point	TP1, Broche 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Réglage du réseau de diffraction	TP1, Broche 2 (TRK. ERR)	Fente de réglage du réseau de diffraction
3	Réglage d'équilibrage d'erreur d'alignement	TP1, Broche 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Réglage d'inclinaison radiale/tangentielle du capteur	TP1, Broche 1 (RF)	Vis de réglage d'inclinaison radiale, vis de réglage d'inclinaison tangentielle
5	Réglage du niveau RF	TP1, Broche 1 (RF)	VR1 (niveau RF)
6	Réglage de gain de boucle asservie de la mise au point	TP1, Broche 5 (FCS. IN) TP1, Broche 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Réglage de gain de boucle asservie de l'alignement	TP1, Broche 3 (TRK. IN) TP1, Broche 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Vérification du signal d'erreur de la mise au point	TP1, Broche 6 (FCS. ERR)	_____

● Tableau des abréviations

FCS. ERR	:Erreur de mise au point
FCS. OFS	:Décalage de mise au point
TRK. ERR	:Erreur d'alignement
TRK. BAL	:Équilibrage d'erreur d'alignement
FCS. GAN	:Gain de mise au point
TRK. GAN	:Gain d'alignement
FCS. IN	:Mise au point correcte
TRK. IN	:Alignement correct

● Instruments de Mesure et Outils

1. Oscilloscope cathodique à deux faisceaux (sonde 10 : 1)
2. Oscillateur de basse fréquence
3. Disque d'essai (YEDS - 7)
4. Filtre passe-bas ($39 \text{ k}\Omega + 0.001 \mu\text{F}$)
5. Résistance ($100 \text{ k}\Omega$)
6. Outils conventionnels

● Point d'Essai et Positions de Réglage de la Résistance Variable

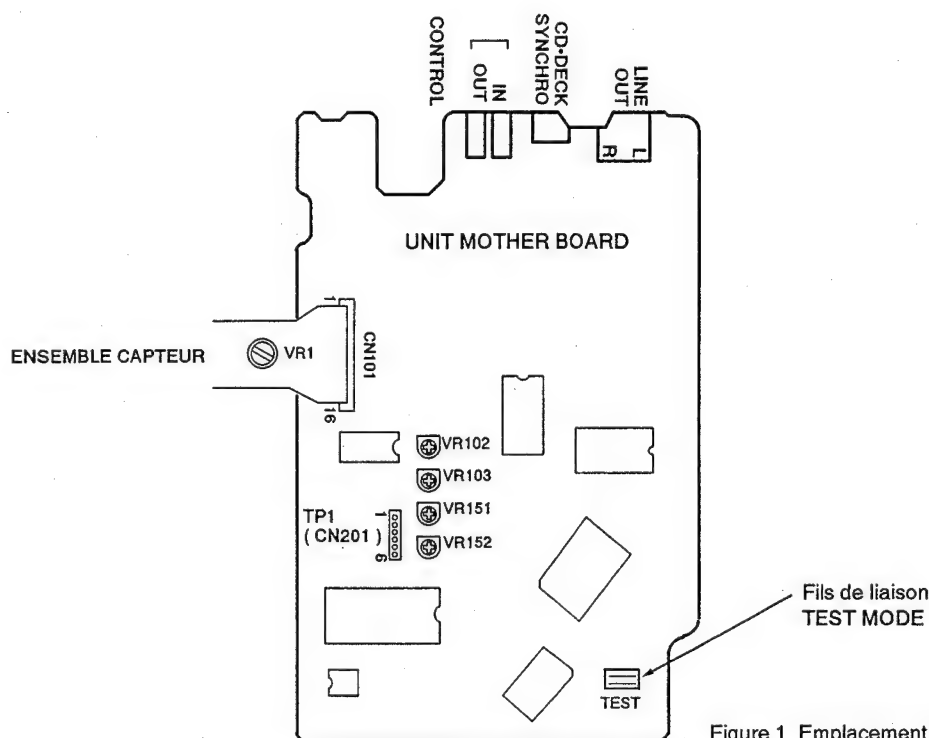


Figure 1 Emplacement des réglages

● Remarques

1. Utiliser une sonde 10:1 pour l'oscilloscope.
2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10:1.

● Mode d'Essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire. Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

[Mise en Mode d'Essai]

Voici la manière de mettre le modèle en mode d'essai.

1. Débrancher le cordon d'alimentation de la prise secteur.
2. Court-circuiter les fils de liaison du mode d'essai. (Voir Figure 1.)
3. Rebrancher le cordon d'alimentation dans la prise secteur.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise sous tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.

[Pour sortir du mode d'essai]

Voici la procédure pour sortir du mode d'essai.

1. Appuyer sur la touche STOP pour arrêter toutes les opérations.
2. Débrancher le cordon d'alimentation de la prise secteur.

[Fonctionnement des touches en mode d'essai]

Code	Nom de la Touche	Fonction en Mode d'Essai	Explications
	PGM (PROGRAM)	Fermeture du circuit asservi de la mise au point	La diode laser s'allume et l'actuateur de la mise au point se relève, puis s'abaisse lentement et le circuit servo de la mise au point se ferme au point où la lentille de l'objectif se focalise sur le disque. Quand l'appareil est dans cet état, si l'on fait légèrement tourner à la main le disque arrêté, le bruit produit par le circuit servo de la mise au point sera audible. Si ce bruit est perçu, le circuit servo de la mise au point fonctionne correctement. Si cette touche est enclenchée et qu'aucun disque n'est installé, la diode laser s'allume, l'actuateur de la mise au point se soulève, se relève, puis s'abaisse et se soulève une deuxième fois et enfin, revient à sa position de départ.
▷	PLAY	Asservissement de rotation en service	Démarre le moteur de rotation dans le sens des aiguilles d'une montre, quand la rotation du disque atteint la vitesse prescrite (environ 500 tours/min à la circonférence interne) et place le circuit servo de rotation dans une boucle fermée. Attention. Si cette touche est enfoncée et qu'un disque n'est pas installé, le moteur de rotation va tourner à la vitesse maximum. Si le circuit servo de la mise au point ne passe pas comme prévu dans une boucle fermée ou que la diode laser brille dans le miroir à la périphérie externe du disque, le même symptôme se produit.
□□	PAUSE	Ouverture/Fermeture du circuit servo de l'alignement	Le fait d'appuyer sur cette touche quand le circuit servo de la mise au point et de la rotation fonctionnent correctement en boucles fermées, place le circuit servo de l'alignement dans une boucle fermée, fait apparaître, sur le panneau avant, le numéro de la piste en cours de lecture et la durée écoulée, puis sort le signal de lecture. Si la durée écoulée n'est pas affichée ou n'est pas correctement calculée, ou si la reproduction sonore est anormale, il se peut que la diode laser s'active dans la section dépourvue de signaux enregistrés, au bord externe du disque, qu'un ajustement quelconque soit dérégulé, ou qu'un autre problème se manifeste. Cette touche est de type à bascule, et ouvre/ferme alternativement le circuit servo de l'alignement. Cette touche est inopérante si un disque n'est pas installé.

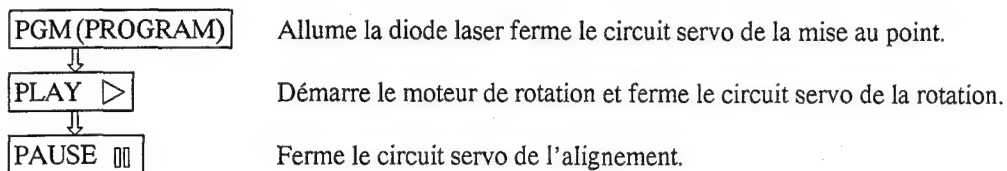
Code	Nom de la Touche	Fonction en Mode d'Essai	Explications
◀◀	MANUAL SEARCH REV	Inversion du chariot (vers l'intérieur)	Déplace le capteur vers la périphérie interne du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
▶▶	MANUAL SEARCH FWD	Inversion du chariot (vers l'extérieur)	Déplace le capteur vers la périphérie externe du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
□	STOP	Arrêt	Initialiser et la rotation du disque s'arrête. Le capteur et le disque ne bougent pas lorsque cette touche est enclenchée.
△	EJECT	Ejection du magasin à disques	Rangé le disque n°1 dans le magasin à disques, puis éjecte celui-ci. Cependant, bien que le magasin soit éjecté, le capteur ne revient pas sur sa position de départ. Même si le magasin à disques est réinstallé, la position du capteur reste inchangée.

Remarque : Lors de l'insertion du magasin, le disque 1 est chargé automatiquement.

[Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo.

Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.



Attendre 2 à 3 secondes entre chaque opération.

1. Réglage du Décalage de la Mise au Point

● Objectif	Règle le décalage CC de l'amplificateur d'erreur de mise au point.		
● Symptôme quand déréglé	Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR).	● Etat du lecteur	Mode d'essai, arrêté (juste l'interrupteur d'alimentation commuté sur marche)
	[Réglages] 5 mV/division 10 ms/division mode CC	● Emplacement du réglage	VR103(FCS. OFS)
		● Disque	Aucun requis
<p>[Marche à suivre]</p> <p>Ajuster VR103 (FCS. OFS) de façon que la tension à TP1 broche 6 (FCS. ERR) soit -150 ± 50 mV.</p>			

2. Réglage du Réseau de Diffraction

● Objectif	Pour aligner les points du rayon laser producteur d'erreur d'alignement sur l'angle optimum de la piste.		
● Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible, les pistes sont sautées.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR) via un filtre passe-bas. (Voir Figure 2)	● Etat du lecteur	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert.
	[Réglages] 50 mV/division 5 ms/division mode CC	● Emplacement du réglage ● Disque	Fente de réglage du réseau de diffraction du capteur. YEDS-7

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
2. Appuyer sur la touche PGM (PROGRAM), puis sur la touche PLAY ▷, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Insérer un tournevis ordinaire dans le réseau de diffraction pour trouver le point zéro. Pour plus de détails, voir page suivante.
4. Si l'on tourne lentement le tournevis dans le sens des aiguilles d'une montre à partir du point zéro, l'amplitude de l'onde augmente graduellement et si l'on continue à tourner le tournevis, l'amplitude de l'onde diminue de nouveau. Tourner le tournevis dans le sens des aiguilles d'une montre à partir du point zéro et régler le réseau de diffraction au premier point où l'amplitude de l'onde atteint son maximum.

Référence: La Figure 3 illustre la relation entre l'angle du faisceau de l'alignement et la piste et la forme d'onde.

Remarque: L'amplitude du signal d'erreur d'alignement se situe aux environs de 3 Vc-c (quand un filtre passe-bas de $39\text{ k}\Omega \pm 0,001\text{ }\mu\text{F}$ est utilisé). Si cette amplitude est extrêmement petite (2 Vc-c ou moins), il peut s'ensuivre un mauvais fonctionnement de la lentille d'objectif ou du capteur. Si la différence entre l'amplitude du signal d'erreur au bord le plus intérieur et au bord le plus extérieur du disque est supérieure à 10%, ceci signifie que le réseau de diffraction n'est pas réglé à son point optimum. Dans ce cas, recommencer le réglage.

5. Replacer le capteur plus ou moins à mi-chemin sur le disque par la touche MANUAL SEARCH REV ◁◁, appuyer sur la touche PAUSE ||| et vérifier que le numéro de piste et la durée écoulée sont affichés sur le panneau avant. Si ces paramètres n'apparaissent pas ce moment, ou que la durée écoulée change de manière irrégulière, vérifier le point zéro et recommencer le réglage du réseau de diffraction.

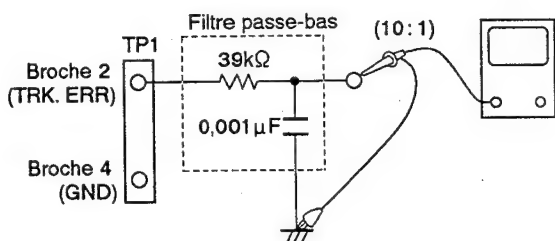
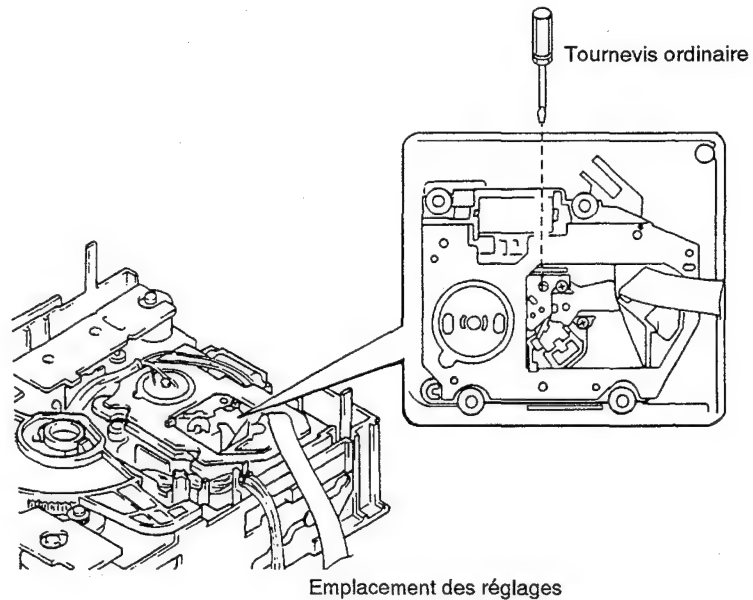


Figure 2



[Repérage du point zéro]

Quand le tournevis est introduit dans la fente de réglage du réseau de diffraction et que l'angle du réseau de diffraction est modifié, l'amplitude du signal d'erreur d'alignement à TP1, broche 2, change. Dans les limites de la plage du réseau de diffraction, il existe six emplacements où l'amplitude de l'onde atteint le minimum. Mais l'enveloppe de la forme d'onde n'est régulière qu'à un seul de ces emplacements. Ce point se situe à l'endroit où les trois rayons laser, divisés par le réseau de diffraction, se situent exactement sur la même piste (voir Figure 3).

Ce point s'appelle le point zéro. Lors du réglage du réseau de diffraction, ce point zéro est repéré et utilisé comme position de référence.

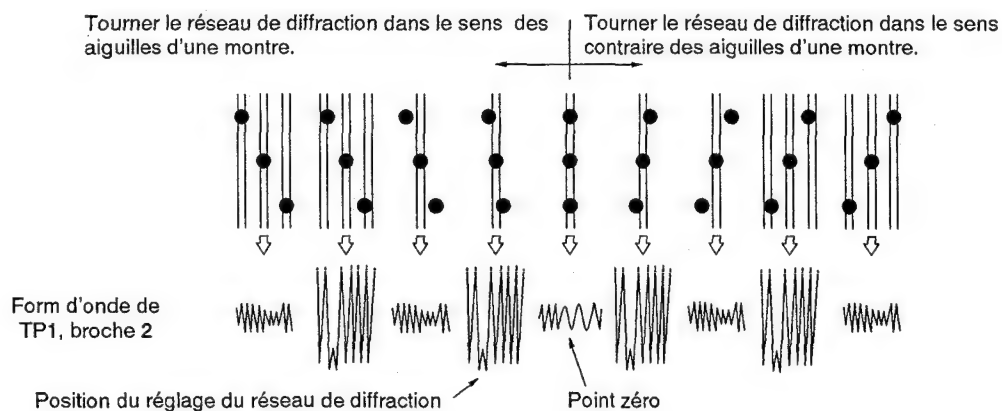
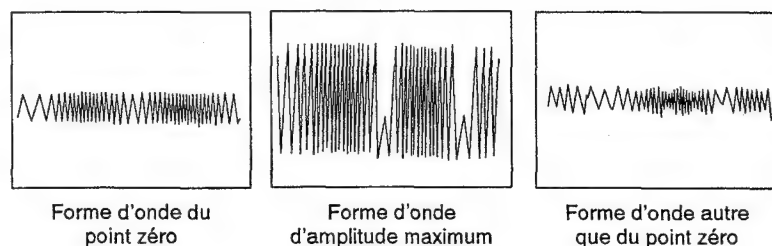


Figure 3

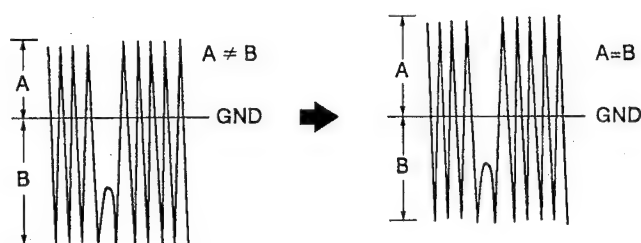


3. Réglage d'Équilibrage d'Erreur d'Alignement

● Objectif	Pour corriger la variation de sensibilité de la photodiode d'alignement.		
● Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR). Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas.	● Etat du lecteur	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert.
	[Réglages] 50 mV/division 5 ms/division mode CC	● Emplacement du réglage	VR102(TRK. BAL)
		● Disque	YEDS-7

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL SEARCH FWD $\triangleright\triangleright$ ou la touche REV $\triangleleft\triangleleft$.
2. Appuyer sur la touche PGM (PROGRAM), puis sur la touche PLAY \triangleright , dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
4. Ajuster VR102 (TRK. BAL) de façon que l'amplitude positive et l'amplitude négative du signal d'erreur d'alignement à TP1, broche 2 (TRK. ERR) soient identiques (c'est-à-dire, qu'il n'y ait aucun composant CC).



S'il y a un composant CC

S'il n'y a pas de composant CC

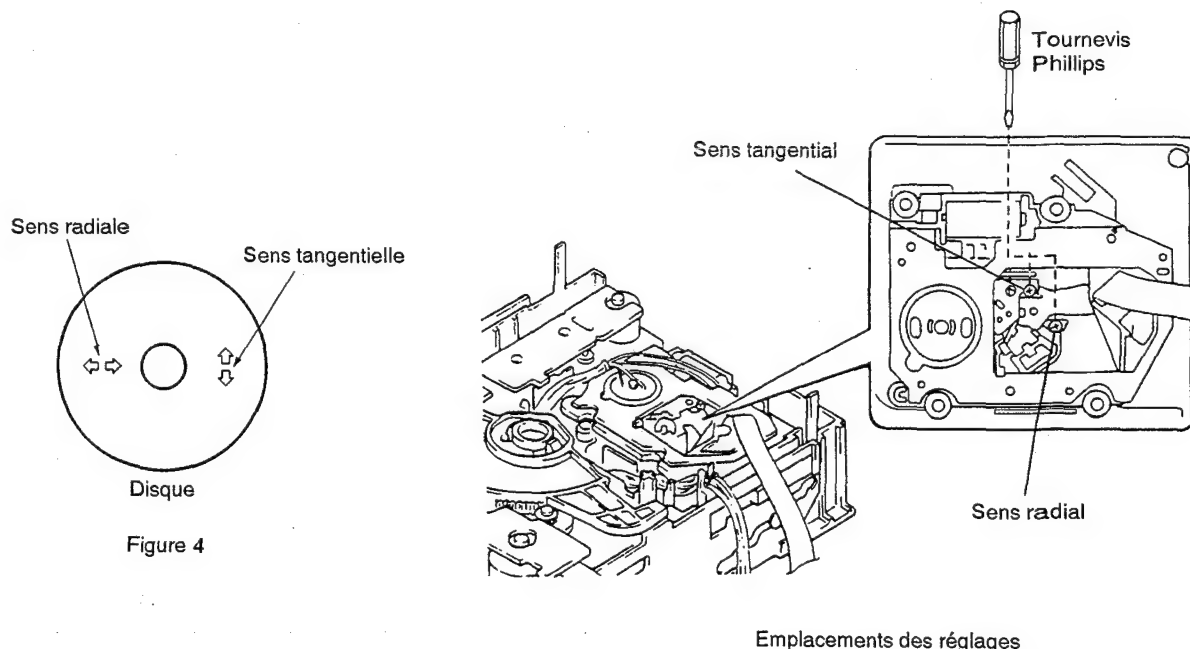
4. Réglage d'Inclinaison Radiale/Tangentielle du Capteur

● Objectif	Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent verticalement le disque et permettre ainsi la lecture optimum des signaux RF.		
● Symptôme quand déréglé	Son interrompu ; certains disques peuvent être lus et pas d'autres.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF). [Réglages] 20 mV/division 200 ns/division mode CA	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture Vis de réglage d'inclinaison radiale. Vis de réglage d'inclinaison tangentielle. YEDS-7

[Marche à suivre]

1. Dans le cas d'un lecteur multidisque, utiliser la touche MANUAL SEARCH FWD \gg ou la touche REV \ll pour déplacer le capteur à mi-chemin sur le disque ($R=35$ mm). Appuyer sur la touche PGM (PROGRAM), PLAY \triangleright et PAUSE \square dans cet ordre, afin de fermer le circuit servo de la mise au point, puis celui de la rotation et placer le lecteur en mode de lecture.
2. D'abord, ajuster la vis d'inclinaison radiale à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.
3. Ensuite, ajuster la vis d'inclinaison tangentielle à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible (Figure 5).
4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.

Remarque: "Radial" et "tangentiel" se rapportent aux sens par rapport au disque illustré à la Figure 4.



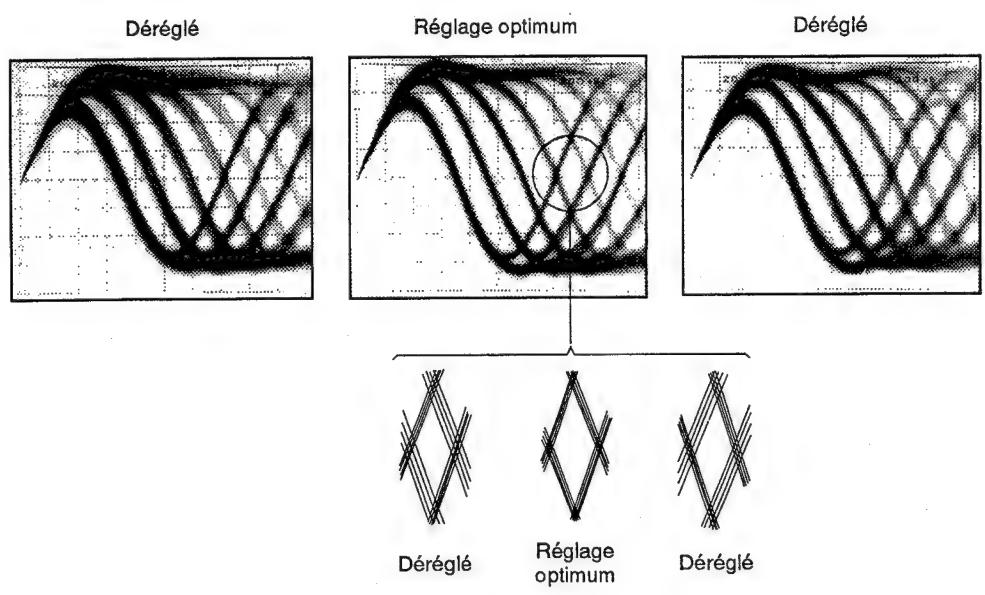


Figure 5 Motif en oeil

5. Réglage du Niveau RF (Niveau RF)

● Objectif	Pour optimiser l'amplitude du signal RF de lecture		
● Symptôme quand déréglé	Pas de lecture ni de recherche		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF).	● Etat du lecteur	Mode d'essai, lecture
	[Réglages] 50 mV/division 10 ms/division mode CA	● Emplacement du réglage ● Disque	VR1 (alimentation du laser) YEDS-7

[Marche à suivre]

1. Placer le capteur à mi-chemin sur le disque (R=35 mm) à l'aide de la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
Ensuite, appuyer sur la touche PGM(PROGRAM), puis sur la touche PLAY ▷, dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecteur.
2. Ajuster VR1 (alimentation du laser) de façon que l'amplitude du signal RF atteigne $1,2 V_{c-c} \pm 0,1 V$.

6. Réglage de Gain de Boucle Asservie de la Mise au Point

● Objectif	Pour optimiser le gain de la boucle d'asservissement de la mise au point.		
● Symptôme quand déréglé	La lecture ne commence pas ou l'actuateur de la mise au point est parasité.		
● Raccordement des instruments de mesure	Voir Figure 6.	● Etat du lecteur	Mode d'essai, lecture
	[Réglages] GAN. 1 GAN. 2 20 mV/division 5mV/division mode X-Y	● Emplacement du réglage	VR152 (FCS. GAN)
		● Disque	YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD $\triangleright\triangleright$ ou la touche REV $\triangleleft\triangleleft$ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY \triangleright , puis sur la touche PAUSE $\square\square$, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR152 (FCS. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

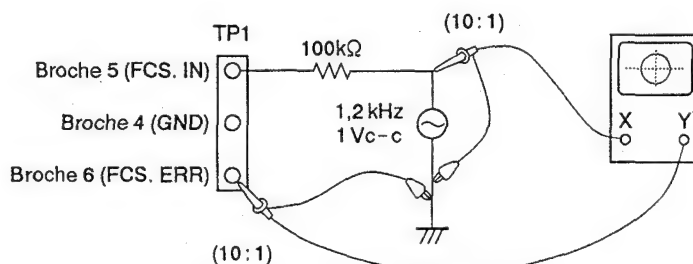
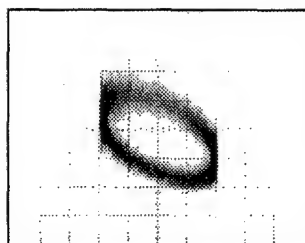
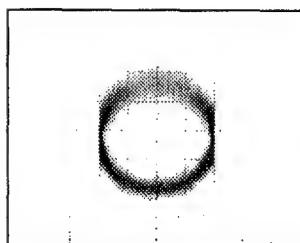


Figure 6

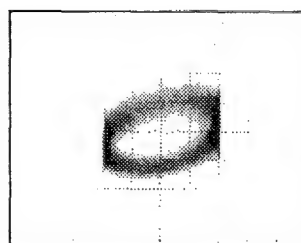
Réglage de gain de mise au point



Gain supérieur



Gain optimum



Gain inférieur

7. Réglage de Gain de Boucle Asservie de l'Alignement

● Objectif	Pour optimiser le gain de la boucle d'asservissement de l'alignement.		
● Symptôme quand déréglé	La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées.		
● Raccordement des instruments de mesure	Voir Figure 7.	● Etat du lecteur	Mode d'essai, lecture
	[Réglages] GAN. 1 GAN. 2 50 mV/division 50 mV/division mode X - Y	● Emplacement du réglage VR151 (TRK. GAN) ● Disque YEDS-7	

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 2 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY ▷, puis sur la touche PAUSE ◻◻, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR151 (TRK. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

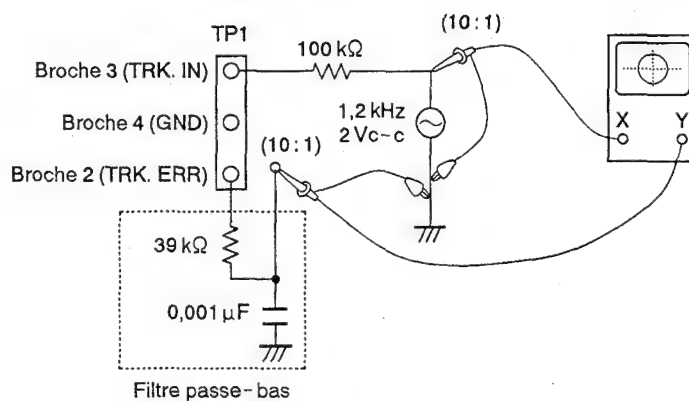
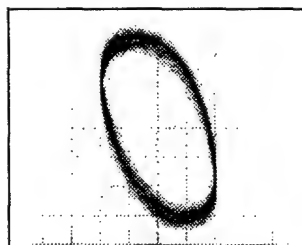
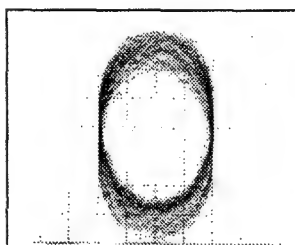


Figure 7

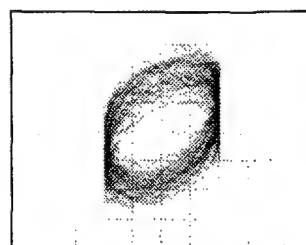
Réglage de gain d'alignement



Gain supérieur



Gain optimum



Gain inférieur

8. Vérification du Signal d'Erreur de la Mise au Point

● Objectif	Pour juger si le capteur est bon ou pas, en observant le signal d'erreur de la mise au point. L'état du capteur s'évalue à partir de l'amplitude du signal d'erreur d'alignement (comme décrit dans le paragraphe relatif à l'équilibrage d'erreur d'alignement), ainsi qu'à partir de la forme d'onde du signal d'erreur de mise au point.		
● Symptôme quand déréglé			
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR). [Réglages] 100 mV/division 5 ms/division mode CC	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode de test, arrêt Aucun YEDS-7

[Marche à suivre]

1. Raccorder TP1, broche 5 à la masse.
2. Installer le disque.
3. Tout en regardant l'écran de l'oscilloscope, appuyer sur la touche PGM (PROGRAM) et observer la forme d'onde de la Figure 8, pendant quelques instants. Vérifier que l'amplitude atteint au moins 2,5 Vc-c et que les amplitudes positive et négatives soient égales. Comme la forme ne sort que pour un moment, quand la touche PGM (PROGRAM) est enclenchée, appuyer sur à plusieurs reprises sur cette touche, jusqu'à ce que la forme d'onde ait été vérifiée.

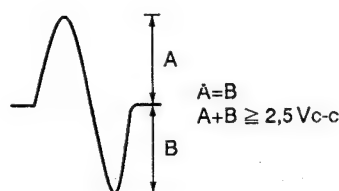


Figure 8

[Evaluation du capteur]

Ne pas tenter d'évaluer l'état du capteur tant que tous les réglages ne sont pas corrects. Les cas suivants témoignent de l'anomalie du capteur.

1. L'amplitude du signal d'erreur d'alignement est extrêmement petite (inférieure à 2 Vc-c).
2. L'amplitude du signal d'erreur de mise au point est extrêmement petite (inférieure à 2,5 Vc-c).
3. Les amplitudes positive et négative du signal d'erreur de mise au point sont extrêmement asymétriques (taux 2:1 ou plus).
4. Le signal RF est trop petit (inférieur à 0,8 Vc-c) et même si VR1 (alimentation du laser) est ajustée, le signal RF ne peut être élevé au niveau standard.

8. AJUSTES

8.1 Métodos de Ajuste

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

● Ítemes de Ajuste/Verificación y Orden

Paso	Ítem	Punto de Prueba	Lugar de Ajuste
1	Ajuste del descentramiento de enfoque	TP1, Patilla 6(FCS. ERR)	VR103(FCS. OFS)
2	Ajuste de retícula	TP1, Patilla 2(TRK. ERR)	Ranura de ajuste de retícula
3	Ajuste del equilibrio de ajuste de seguimiento	TP1, Patilla 2(TRK. ERR)	VR102(TRK. BAL)
4	Ajuste de la inclinación en sentido radial / tangencial del captor	TP1, Patilla 1(RF)	Tornillo de ajuste de la inclinación radial. Tornillo de ajuste de la inclinación tangencial
5	Ajuste del nivel de RF	TP1, Patilla 1(RF)	VR1 (Nivel de RF)
6	Ajuste de la ganancia del bucle del servo de enfoque	TP1, Patilla 5(FCS. IN) TP1, Patilla 6(FCS. ERR)	VR152(FCS. GAN)
7	Ajuste de la ganancia del bucle del servo de seguimiento	TP1, Patilla 3(TRK. IN) TP1, Patilla 2(TRK. ERR)	VR151 (TRK. GAN)
8	Verificación de la señal de error de enfoque	TP1, Patilla 6(FCS. ERR)	_____

● Tabla de abreviaturas

FCS. ERR	:Error de enfoque
FCS. OFS	:Descentramiento de enfoque
TRK. ERR	:Error de seguimiento
TRK. BAL	:Equilibrio de seguimiento
FCS GAN	:Ganacia de enfoque
TRK GAN	:Ganacia de seguimiento
FCS. IN	:Entrada de enfoque
TRK. IN	:Entrada de seguimiento

● Instrumentos y Herramientas de Medición

1. Osciloscopio de doble traza (Sonda de 10:1)
2. Oscilador de baja frecuencia
3. Disco de prueba (YEDS - 7)
4. Filtro de paso bajo ($39 \text{ k}\Omega + 0,001 \mu \text{F}$)
5. Resistor ($100 \text{ k}\Omega$)
6. Herramientas estándar

● Ubicación de Los Puntos de Prueba y Los Resistores Variables de Ajuste

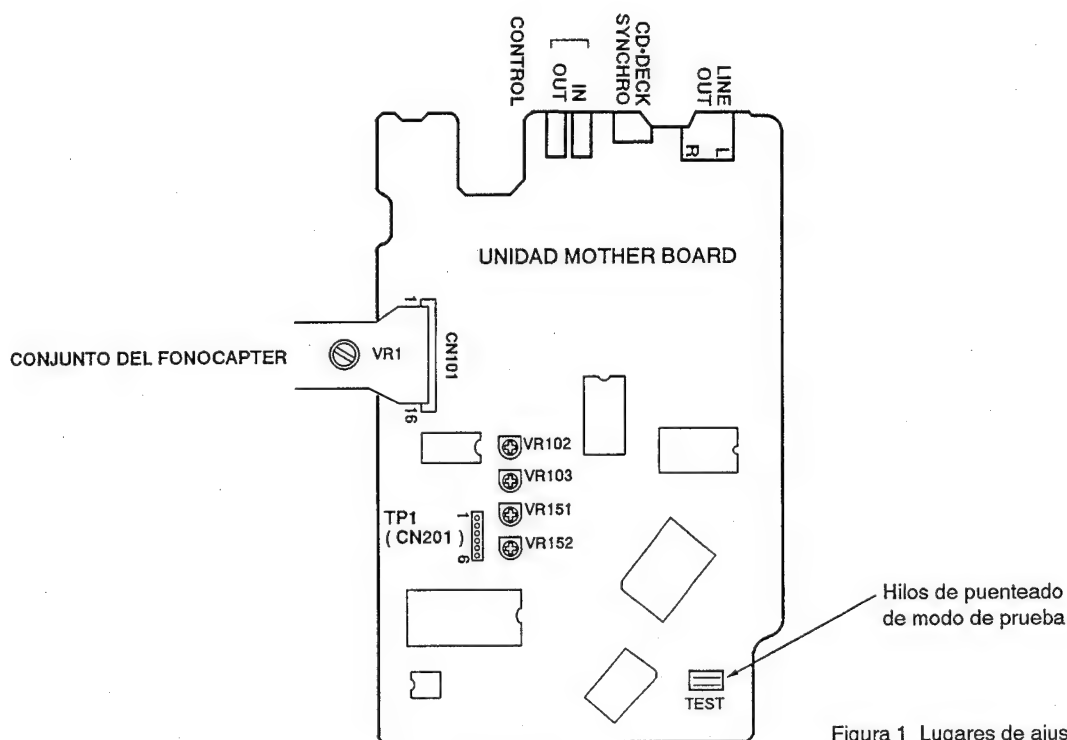


Figura 1 Lugares de ajuste

● Notas

1. Emplee una sonda de 10:1 para el osciloscopio.
2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

● Modo de Prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

[Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.

1. Desenchufe el cable de alimentación de la toma de CA.
2. Controcircuite los hilos de puenteado de modo de prueba. (Consulte la figura 1.)
3. Enchufe el cable de alimentación de la toma de CA.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siendo la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.

[Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.

1. Presione la tecla STOP y cese todas las operaciones.
2. Desenchufe el cable de alimentación de la toma de CA.

[Operaciones de teclas en el modo de prueba]

Código	Nombre de la Tecla	Función en el Modo de Prueba	Explicación
	PGM (PROGRAM)	Cierre del servo de enfoque	<p>El diodo láser se encenderá y el actuador de enfoque se eleva, después se desciende lentamente, y el servo de enfoque se cerrará en el punto en el que el objetivo se enfoca sobre el disco.</p> <p>Con el reproductor en este estado, si gira ligeramente con la mano el disco parado, podrá oír el sonido del servo de enfoque.</p> <p>Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se vera empujado hacia arriba, y después se levantará y descenderá y se eleva dos veces, y volverá a su posición original.</p>
▷	PLAY	Activación del servo del eje	<p>Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado.</p> <p>Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima.</p> <p>Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz láserico incide en la sección del espejo en el la periferia del disco, ocurrirá el mismo síntoma.</p>
□□	PAUSE	Apertura/cierre del servo de seguimiento	<p>Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de seguimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción.</p> <p>Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo láserico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema.</p> <p>Esta tecla es basculante de acción alternativa, y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.</p>

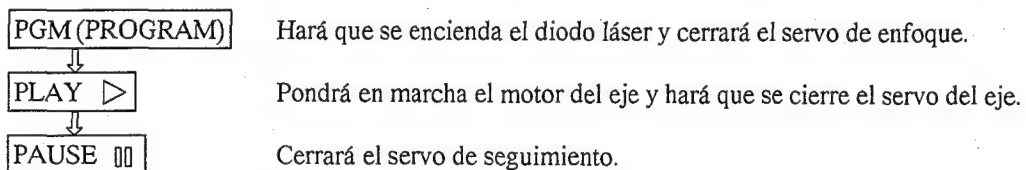
Código	Nombre de la Tecla	Función en el Modo de Prueba	Explicación
◀◀	MANUAL SEARCH REV	Retroceso del carro (hacia adentro)	Moverá la posición del captor hacia el diámetro interior del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
▶▶	MANUAL SEARCH FWD	Avance del carro (hacia afuera)	Moverá la posición del captor hacia la periferia del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
□	STOP	Parada	Inicializa y se para la rotación del disco. El captor y el disco permanecen donde están cuando se presiona esta tecla.
△	EJECT	Expulsión del cargador de discos compactos	Almacenará el disco 1 en el cargador de discos compactos, y después expulsará dicho cargador. Sin embargo, aunque el cargador de discos compactos sea expulsado, el captor no volverá a su posición de reposo. Aunque vuelva a montar el cargador de discos compactos, el captor permanecerá donde estaba.

Nota : Cuando inserte el cargador, el disco 1 del mismo se cargará automáticamente.

[Cómo reproducir un disco en el modo de prueba]

En el modo de prueba, como los servos funcionan independientemente, la reproducción de un disco requiere el que usted emplee las teclas en el orden correcto para cerrar los servos.

A continuación se indica la secuencia de operación de teclas para reproducir un disco en el modo de prueba.



Espere de 2 a 3 segundos por lo menos entre cada una de estas operaciones.

1. Ajuste del Descentramiento del Enfoque

● Objetivo	Ajuste de la tensión de CC para el amplificador de error de enfoque.		
● Síntomas en caso de desajuste	El reproductor no enfoca y la señal de RF contiene perturbaciones.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR)	● Estado del reproductor	Mode de prueba, parado (con el interruptor de alimentación en ON)
	[Ajustes] 5 mV/división 10 ms/división modo de CC	● Lugar de ajuste	VR103 (FCS. OFS)
		● Disco	No es necesario
[Procedimiento] Ajuste VR103 (FCS. OFS) de forma que la tensión de CC de TP1, patilla 6 (FCS. ERR) sea de $-15\,0 \pm 50\text{ mV}$.			

2. Ajuste de Retícula

● Objetivo	Alineación de los puntos del haz láser de generación de error de seguimiento al ángulo óptimo en la pista.		
● Síntomas en caso de desajuste	La reproducción no se inicia, la búsqueda de canciones es imposible, las pistas se saltan.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla2 (TRK. ERR) a través de un filtro de paso bajo. (Consulte la figura 2) [Ajustes] 50 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto. Ranura de ajuste de retícula del captor YEDS-7

[Procedimiento]

1. Mueva el captor hasta el la mitad del disco (R=35mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁.
2. Presione la tecla PGM (PROGRAM), y después la tecla PLAY ▷, por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Inserte un destornillador normal en la ranura de ajuste de la retícula y ajuste la retícula hasta encontrar el punto nulo. Para más detalles, consulte la página siguiente.
4. Si gira lentamente el destornillador hacia la derecha desde el punto nulo, la amplitud de la onda aumentará gradualmente. Después, si continúa girando el destornillador, la amplitud de la onda se volverá otra vez más pequeña. Gire el destornillador hacia la derecha desde el punto nulo y ajuste la retícula al primer punto en el que la amplitud de la onda alcance su valor máximo.

Referencia : En la figura 3 se muestra la relación entre el ángulo del haz de seguimiento con la pista y la forma de onda.

Nota : La amplitud de la señal de error de seguimiento será de aproximadamente 3 Vp-p (cuando se emplee un filtro de paso bajo de 39 kΩ, 0,001 μF). Si la amplitud está extremadamente pequeña (2 Vp-p ó menos), la causa será el funcionamiento malo en el lente objetivo o en el captador. Si la diferencia entre la amplitud de la señal de error en el borde interior y exterior del disco es superior al 10%, la retícula no estará ajustada al punto óptimo, por lo que tendrá que volver a ajustarla.

5. Devuelva el captor hasta la mitad más o menos del disco con la tecla MANUAL SEARCH REV ◁◁, presione la tecla PAUSE ⏏, y vuelva a comprobar si en el panel frontal se visualizan el número de canción y el tiempo transcurrido. Si no se visualizan esta vez, o si el tiempo transcurrido cambia irregularmente, vuelva a comprobar el punto nulo y ajuste otra vez la retícula.

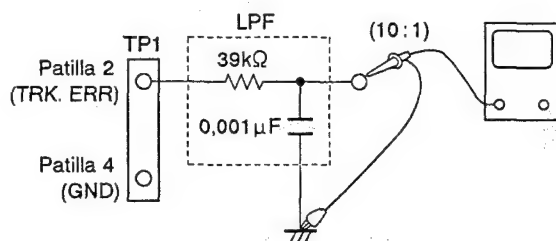
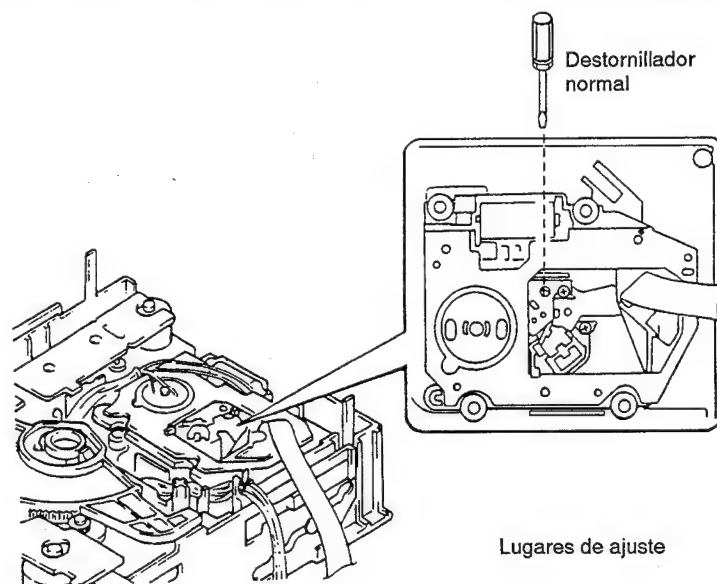


Figura 2



[Cómo encontrar el punto nulo]

Cuando inserte el destornillador normal en la ranura para el ajuste de la retícula y cambie el ángulo de la misma. La amplitud de la señal de error de seguimiento de TP1, patilla 2, cambiará. Dentro del margen para la retícula existen cinco o seis lugares en los que la amplitud alcanza el valor mínimo. De estos cinco o seis lugares, solamente hay uno en el que la envolvente de la forma de onda es uniforme. Este lugar es donde los tres haces lásericos divididos por la retícula se encuentran exactamente sobre la misma pista. (Consulte la figura 3.)

Este punto se denomina punto nulo. Cuando ajuste la retícula, este punto se encontrará y empleará como posición de referencia.

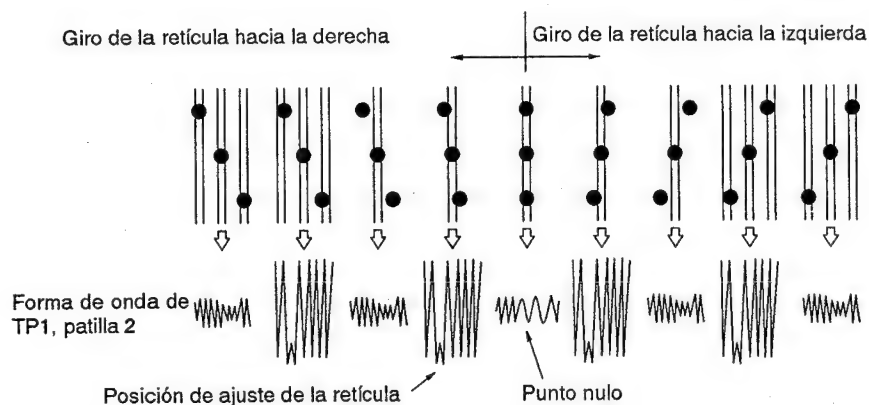
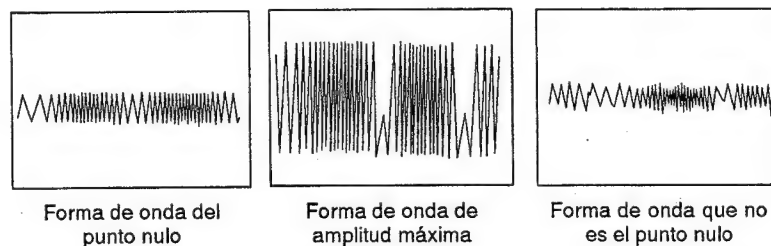


Figura 3

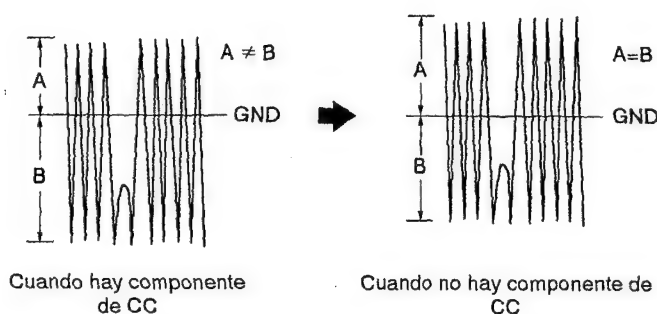


3. Ajuste del Equilibrio de Error de Seguimiento

● Objetivo	Corrección de la variación de la sensibilidad del fotodiodo de seguimiento.		
● Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 2 (TRK. ERR). Esta conexión puede realizarse a través de un filtro de paso bajo [Ajustes] 50 mV/división 5 ms/división modo de CC	● Estado del reproductor	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto
		● Lugar de ajuste	VR102 (TRK. BAL)
		● Disco	YEDS-7

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD $\triangleright\triangleright$ o la tecla REV $\triangleleft\triangleleft$.
2. Presione la tecla PGM (PROGRAM), y después la tecla PLAY \triangleright , por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Haga coincidir la línea brillante (masa) del centro de la pantalla del osciloscopio y ponga éste en el modo de CC.
4. Ajuste VR102 (TRK. BAL) de forma que la amplitud positiva y la negativa de la señal de error de seguimiento de TP1 patilla 2 (TRK. ERR) sean iguales (en otras palabras, de forma que no haya componente de CC).



4. Ajuste de la Inclinación en Sentido Radial /Tangencial del Captor

● Objetivo	Ajustar el ángulo del captor en relación con el disco de forma que los haces lásericos incidan perpendicularmente sobre el mismo a fin de poder leer con la mayor exactitud las señales de RF.		
● Síntomas en caso de desajuste	Sonido quebrado, algunos discos pueden reproducirse pero otros no.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1 (RF).	● Estado del reproductor	Modo de prueba, reproducción
	[Ajustes] 20 mV/división 200 ns/división modo de CA	● Lugar de ajuste	Tornillo de ajuste de la inclinación radial y tornillo de ajuste de la inclinación tangencial
		● Disco	YEDS-7

[Procedimiento]

- Para un tipo de reproducción múltiple de disco compacto, emplee la tecla MANUAL SEARCH FWD >>> o la tecla REV <<< a fin de mover el captor hasta la mitad del disco (R=35 mm)
Presione la tecla PGM (PROGRAM), la tecla PLAY >, y después la tecla PAUSE |||, por este orden, a fin de cerrar el servo de enfoque, después el servo del eje, y por último para poner el reproductor en el modo de reproducción.
- En primer lugar, gire el tornillo de ajuste de inclinación radial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad.
- A continuación, ajuste el tornillo de ajuste de inclinación tangencial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad (figura 5).
- Vuelva a girar el tornillo de ajuste de inclinación radial y el tornillo de inclinación tangencial hasta que el patrón ocular pueda verse con la mayor claridad. Si es necesario, ajuste alternativamente los dos tornillos hasta que el patrón ocular pueda verse con la mayor claridad.

Nota:Radial y tangencial significan las direcciones en relación con el disco mostrado en la figura 4.

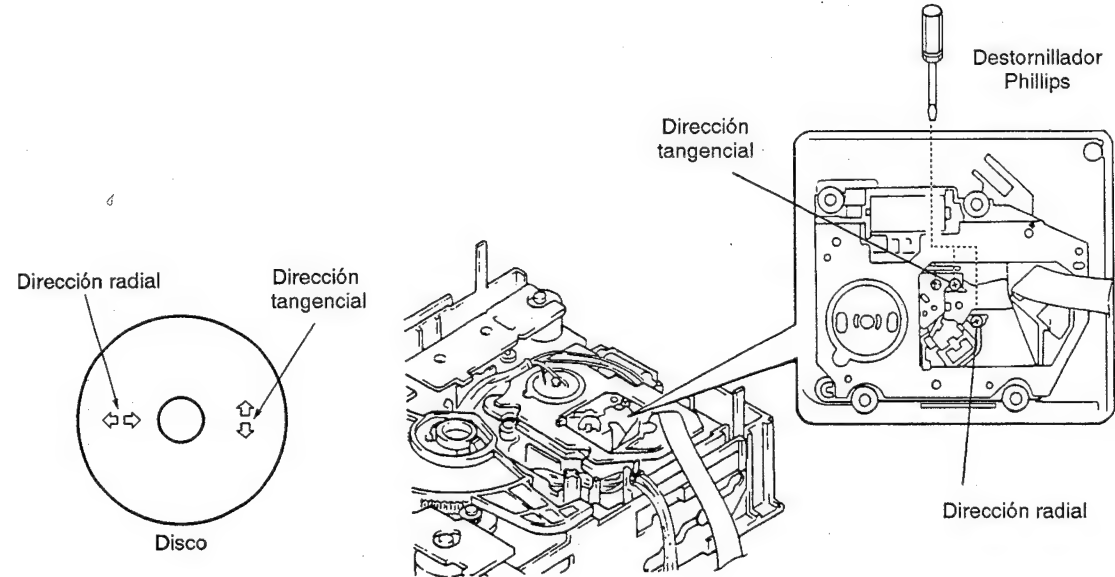


Figura 4

Lugares de ajuste

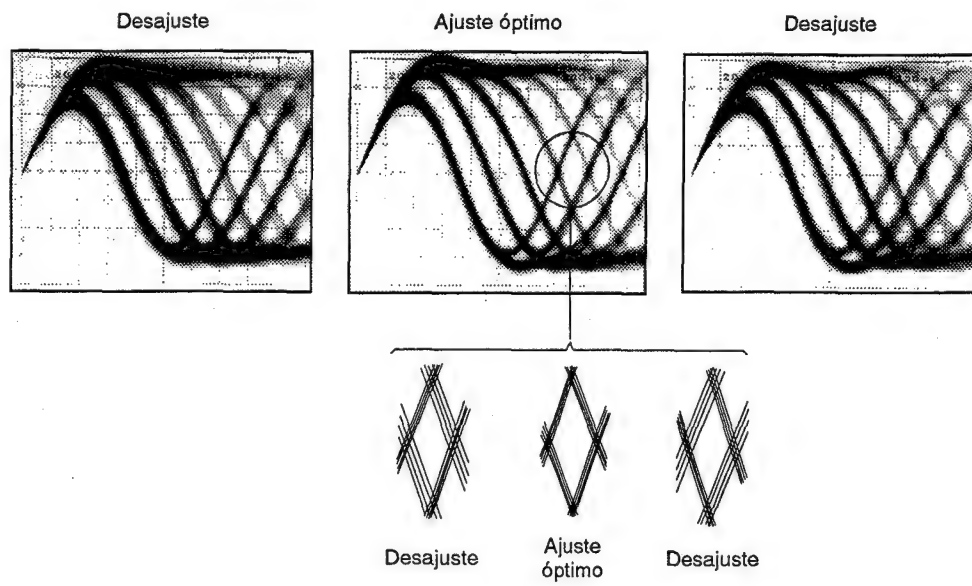


Figura 5 Patron optico

5. Ajuste del Nivel de RF

● Objetivo	Optimización de la amplitud de la señal de RF de reproducción.		
● Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1 (RF).	● Estado del reproductor	Modo de prueba, reproducción
	[Ajustes] 50 mV/división 10 ms/división modo de CA	● Lugar de ajuste	VR1 (potencia de láser)
		● Disco	YEDS-7
<p>[Procedimiento]</p> <p>1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD >> o la tecla REV <<, presione la tecla PGM (PROGRAM), después la tecla PLAY ▷, por este orden a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción.</p> <p>2. Ajuste VR1 (potencia de láser) de forma que la amplitud de la señal de RF sea de 1,2 Vp-p ± 0,1 V.</p>			

6. Ajuste de la Ganancia del Bucle del Servo de Enfoque

● Objetivo	Optimización de la ganancia del bucle del servo de enfoque.		
● Síntomas en caso de desajuste	La reproducción no se inicia o el actuador de enfoque produce ruido.		
● Conexión de los instrumentos de medición	Consulte la figura 6.	● Estado del reproductor	Modo de prueba, reproducción
	[Ajustes] CH1 CH2 20 mV/división 5mV/división modo X-Y	● Lugar de ajuste	VR152 (FCS. GAN)
		● Disco	YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PGM (PROGRAM), la tecla PLAY ▷, y después la tecla PAUSE ◻◻, por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción.
3. Ajuste VR152 (FCS. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

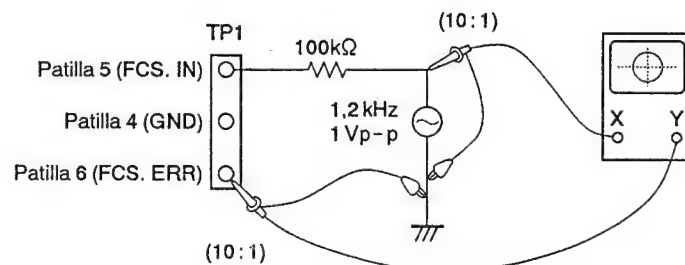
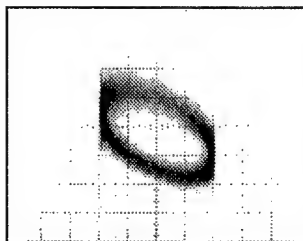
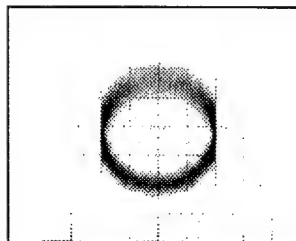


Figura 6

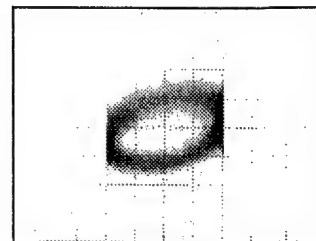
Ajuste de la ganancia de enfoque



Ganancia superior



Ganancia óptima



Ganancia inferior

7. Ajuste de la Ganancia del Bucle del Servo de Seguimiento

● Objetivo	Optimización de la ganancia del bucle del servo de seguimiento.		
● Síntomas en caso de desajuste	La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas.		
● Conexión de los instrumentos de medición	Consulte la figura 7.	● Estado del reproductor	Modo de prueba, reproducción
	[Ajustes] CH1 CH2 50 mV/división 50 mV/división modo X-Y	● Lugar de ajuste	VR151(TRK. GAN)
		● Disco	YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 2 Vp-p.
2. Presione la tecla MANUAL SEARCH FWD >> o la tecla REV << para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PGM (PROGRAM), la tecla PLAY ▷ , y la tecla PAUSE ⏸ , por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción.
3. Ajuste VR151 (TRK. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

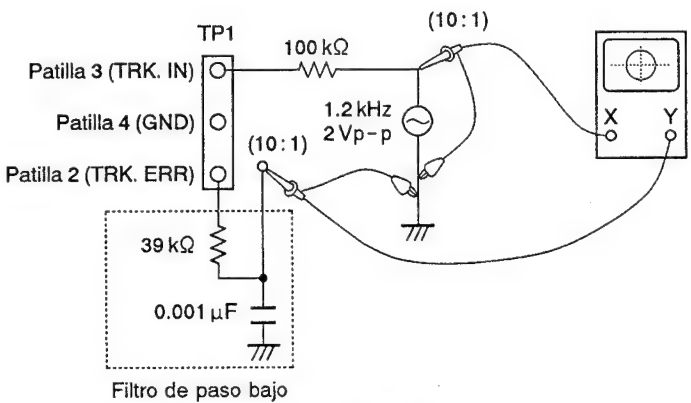



Figura 7

Ajuste de la ganancia de seguimiento



Ganancia superior

Ganancia óptima

Ganancia inferior

8. Verificación de la Señal de Error de Enfoque (Curva S de Enfoque)

● Objetivo	Juzgar si el captor está bien o no observando la señal de error de enfoque. El captor se juzga por la amplitud de la señal de error de seguimiento (como se ha indicado en la sección sobre el ajuste del equilibrio de error de seguimiento) y la forma de onda de la señal de error de enfoque.		
● Síntomas en caso de desajuste			
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR). [Ajustes] 100 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, parada Ninguno YEDS-7

[Precedimiento]

1. Conecte TP1, patilla 5, a masa.
2. Coloque el disco.
3. Contemplando la pantalla del osciloscopio, presione la tecla PGM (PROGRAM) y observe durante un momento la forma de onda de la figura 8. Verifique si la amplitud es de 2,5 Vp-p por lo menos y si la amplitud de las partes positiva y negativa son iguales. Como la forma de onda solamente sale durante un momento cuando se presiona la tecla PGM (PROGRAM), presione una y otra vez esta tecla hasta que logre comprobar la forma de onda.

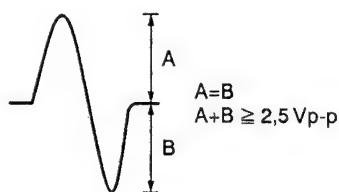


Figura 8

[Juicio sobre el captor]

No juzgue el captor hasta haber finalizado correctamente todos los ajustes. En los casos siguientes es posible que haya algo erróneo en el captor.

1. La amplitud de la señal de error de seguimiento es extremadamente pequeña (menos de 2 Vp-p).
2. La amplitud de la señal de error de enfoque es extremadamente pequeña (menos de 2,5 Vp-p).
3. Las amplitudes de las partes positiva y negativa de la señal de error de enfoque son extremadamente asimétricas (relación de 2:1 o superior).
4. La señal de RF es demasiado pequeña (menos de 0,8 Vp-p) y aunque se ajuste VR1 (potencia de láser), la señal de RF no puede aumentarse hasta el nivel estándar.

9. FOR PD– M550 / KUXJS, KC, MEM, UB, PD– M455 / KUXJS, KC, PD– M453 / KUXJS, PD– M450 / KUXJS, KC AND MEM TYPES

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

9.1 FOR PD– M550 / KUXJS, KC, MEM AND UB TYPES

CONTRAST OF MISCELLANEOUS PARTS

The PD– M550 / KUXJS, KC, MEM and UB types are the same as the PD– M550 / KU type with the exception of the following sections.

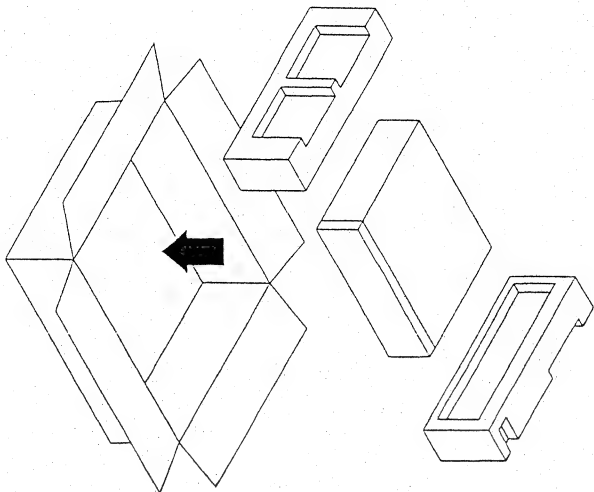
Mark	Symbol & Description	Part No.					Remarks
		PD– M550/ KU type	PD– M550/ KUXJS type	PD– M550/ KC type	PD– M550/ MEM type	PD– M550/ UB type	
⊙	Mother board assembly	PWM1474*	PWM1483*	PWM1474	PWM1475	PWM1475	For packing
△	Power transformer (AC120V)	PTT1187*	PTT1203*	PTT1187	.....	.....
△	Power transformer (AC220V – 230V )	.....	.....	.....	PTT1188	.....
△	Power transformer (AC230V – 240V )	.....	.....	.....	.....	PTT1189
△	Strain relief	CM– 22	CM– 22	CM– 22	CM– 22B	CM– 22B	
△	Display window	PAM1477	PAM1477	PAM1477	PAM1505	PAM1505	
	AC power cord	RDG1010	RDG1010	RDG1010	PDG1003	PDG1036	
	Connection cord with mini plug	PDE– 319	PDE– 319	PDE– 319	.....	.....
	CD packing case	PHG1611	PHG1672	PHG1663	PHG1690	PHG1690	
	Operating instructions (English)	PRB1142	PRB1152	PRB1142	.....	PRB1142
	Operating instructions (English / French / Dutch / Italian / German / Swedish / Spanish / Portuguese )	.....	.....	.....	PRE1144	.....
	Operating instructions (French)	PRC1031	

Note: As to the SCHEMATIC DIAGRAM and P. C. BOARDS CONNECTION DIAGRAM of the KUXJS and KC types, refer to those of the KU type.

*: PWM1474 with PTT1187 is compatible with PWM1483 with PTT1203.

Therefore, when exchanging mother board assembly, exchange the assembly with the corresponding transformer.

● PACKING FOR KUXJS TYPE



MOTHER BOARD ASSEMBLIES (PWM1483 AND PWM1475)

The mother board assembly (PWM1483 and PWM1475) are the same as the mother board assembly (PWM1474) with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		PWM1474	PWM1483	PWM1475	
Δ	IC31 D391-D394 R391 R392 JA391, JA392 (CONTROL (IN, OUT)) L395 Lradial inductor	..... ISS254 RD1/6PM244J RD1/6PM102J PKN1004 .....	..... ISS254 RD1/6PM244J RD1/6PM102J PKN1004	ICP-N10	

Note: The mother board assembly (PWM1483) is the same as the mother board assembly (PWM1474) for the service supply parts.

9.2 FOR PD - M455 / KUXJS AND KC TYPES

CONTRAST OF MISCELLANEOUS PARTS

The PD - M455 / KUXJS and KC types are the same as the PD - M455 / KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		PD - M455/ KU type	PD - M455/ KUXJS type	PD - M455/ KC type	
Δ	Mother board assembly Power transformer (AC120V) CD packing case Operating instructions (English) Operating instructions (French)	PWM1474 PTT1187 PHG1596 PRB1142	PWM1483 PTT1203 PHG1673 PRB1152	PWM1474 PTT1187 PHG1661 PRB1142 PRC1031	For packing

Note: As to the SCHEMATIC DIAGRAM and P. C. BOARDS CONNECTION DIAGRAM of the KUXJS and KC types, refer to those of the KU type.

MOTHER BOARD ASSEMBLY (PWM1483)

The mother board assembly (PWM1483) is the same as the mother board assembly (PWM1474) for the service supply parts excepting power supply section.

9.3 FOR PD - M453 / KUXJS TYPE

CONTRAST OF MISCELLANEOUS PARTS

The PD - M453 / KUXJS type is the same as the PD - M453 / KU type with the exception of the following sections.

MOTHER BOARD ASSEMBLY (PWM1482)

Mark	Symbol & Description	Part No.		Remarks
		PD - M453/ KU type	PD - M453/ KUXJS type	
Δ	Mother board assembly Power transformer (AC120V) CD packing case Operating instructions (English)	PWM1472 PTT1187 PHG1668 PRB1142	PWM1482 PTT1203 PHG1674 PRB1152	For packing

The mother board assembly (PWM1482) is the same as the mother board assembly (PWM1472) for the service supply parts excepting power supply section.

9.4 FOR PD - M450 / KUXJS, KC AND MEM TYP

CONTRAST OF MISCELLANEOUS PARTS

The PD - M450 / KUXJS, KC and MEM types are the same as the sections.

Mark	Symbol & Description	PD - M450/ KU type
●	Mother board assembly Headphone board assembly Power transformer (AC120V) Power transformer (AC220V - 230V) Strain relief	PWM1468 PTT1187 CM-22
Δ	AC power cord Headphone knob Display window Function panel assembly Leg assembly Insulator Stopper Function panel CD packing case Operating instructions (English)	RDG1010 PAM1478 PEA1134 PXA1201 Non supply PHG1597 PRB1142
Δ	Operating instructions (English / French / Dutch / Italian / German / Swedish / Spanish / Portuguese) Operating instructions (French )	..... ..... ..... .....

Note: As to the SCHEMATIC DIAGRAM and P. C. BOARDS CONNECTION DIAGRAM of the KUXJS and KC types, refer to those of the KU type.

MOTHER BOARD ASSEMBLIES (PWM1480 and PWM1468)

The mother board assembly (PWM1480 and PWM1469) are the same as the mother board assembly (PWM1468) with the exception of the following sections.

Mark	Symbol & Description	PWM1468
Δ	IC31 IC406 R445, R446 R447, R448 CN401 L395 Lradial inductor	..... ..... RD1/6PM681J

Note: The mother board assembly (PWM1480) is the same as the mother board assembly (PWM1468) for the service supply parts excepting power supply section.

HEADPHONE BOARD ASSEMBLY

The headphone board assembly of the PD - M450 / MEM type is the same as the PD - M450 / KUXJS type.

9.4 FOR PD - M450 / KUXJS, KC AND MEM TYPES

CONTRAST OF MISCELLANEOUS PARTS

The PD - M450 / KUXJS,KC and MEM types are the same as the PD - M450 / KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		PD - M450/ KU type	PD - M450/ KUXJS type	PD - M450/ KC type	PD - M450/ MEM type	
●	Mother board assembly	PWM1468	PWM1480	PWM1468	PWM1469 Non supply	
Δ	Headphone board assembly	PTT1187	PTT1203	PTT1187	PTT1188	
Δ	Power transformer (AC120V)	CM - 22	CM - 22	CM - 22	CM - 22B	
Δ	Power transformer (AC220V - 230V)					
Δ	Strain relief					
Δ	AC power cord	RDG1010	RDG1010	RDG1010	PDG1003 PAC1370	
Δ	Headphone knob	PAM1478 PEA1134	PAM1478 PEA1134	PAM1478 PEA1134	PAM1506 PEA1160	
Δ	Display window	PXA1201	PXA1201	PXA1201	.....
Δ	Function panel assembly				VNK1095 PNM1070	
Δ	Leg assembly	.....	.....	.....	Non supply PHG1691	
Δ	Insulator	.....	.....	.....	.....
Δ	Stopper	.....	.....	.....	.....
Δ	Function panel	Non supply PHG1597	Non supply PHG1675	Non supply PHG1662	Non supply PHG1691	
Δ	CD packing case	PRB1142	PRB1152	PRB1142	.....
Δ	Operating instructions (English )	.....	.....	.....	PRE1144	For packing
Δ	Operating instructions (English / French / Dutch / Italian / German / Swedish / Spanish / Portuguese )	.....	.....	.....	.....
Δ	Operating instructions (French )	.....	.....	PRC1031	.....

Note: As to the SCHEMATIC DIAGRAM and P. C. BOARDS CONNECTION DIAGRAM of the KUXJS and KC types, refer to those of the KU type.

MOTHER BOARD ASSEMBLIES (PWM1480 and PWM1469)

The mother board assembly (PWM1480 and PWM1469) are the same as the mother board assembly (PWM1468) with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		PWM1468	PWM1480	PWM1469	
Δ	IC31 IC406 R445, R446 R447, R448 CN401	..... RD1/6PM681J ..... ..... .....	..... RD1/6PM681J	ICP-N10 BA15218 RD1/6PM271J RD1/6PM471J Non supply LFAR22M	
Δ	L395 Ladial inductor	.....	.....	.....

Note: The mother board assembly (PWM1480) is the same as the mother board assembly (PWM1468) for the service supply parts excepting power supply section.

HEADPHONE BOARD ASSEMBLY

The headphone board assembly of the PD - M450 / HEM type is the same as that of the PD - M550 and PD - M455 types.

9.5 SCHEMATIC DIAGRAM OF THE MEM AND UBT

1. RESISTORS :

Indicated in Ω , 1/4W, 1/8W and 1/8W, ± 5% tolerance unless otherwise noted.
M.M. Ω , (F): ± 1%, (G): ± 2%, (K): ± 10%, (M): ± 20% tolerance.

2. CAPACITORS :

Indicated in capacity (μ F)/voltage(V)unless otherwise noted p : pF, ind voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :

□ :DC voltage(V)at play state.
⇄ mA :DC current at play state.
Value in () is DC current at stop state.

4. OTHERS :

→ :Signal route.
⊙ :Adjusting point.

The Δ mark found on some component parts indicates the importance factor of the part. Therefore, when replacing, be sure to use part designation.

※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may improve in design.

5. SWITCHES : (The underlined indicates the switch position)

SWITCH BOARD ASSEMBLY

S801 : POWER ON — OFF
S802 : EJECT

SERVO MECHANISM ASSEMBLY

INSIDE SWITCH

LOADING BOARD ASSEMBLY

S601 : LPS1
S602 : LPS2

SELECT BOARD ASSEMBLY

S603 : MZS1
S604 : MZS2

S605 : DCHM

S606 : DCNT

FUNCTION BOARD ASSEMBLY

(PD - M550 TYPE)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S718 : 7
S719 : 8
S720 : 9
S721 : 10
S722 : 4
S723 : 5
S724 : 6
S725 : 20
S726 : 1
S727 : 2
S728 : 3
S729 : +10
S730 : <<<] MANUAL SEARCH
S731 : <>]
S732 : PLAY
S733 : <<<] TRACK SEARCH
S734 : <>>]
S735 : ADLC

FUNCTION BOARD ASSEMBLY

(PD - M455, PD - M453 AND P

S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM
S710 : REPEAT
S711 : PAUSE
S712 : AUTO F
S713 : HI - LITE
S714 : COMPU
S715 : PGM
S716 : DELETE
S717 : TIME FA
S718 : <<<]
S719 : <>]
S720 : 9
S721 : 10
S722 : <<<]
S723 : <>>]
S724 : ADLC

S715 : PGM

S716 : DELETE

S717 : TIME FA

S718 : <<<]

S719 : <>]

S720 : 9

S721 : 10

S722 : 4

S723 : 5

S724 : 6

S725 : 20

S726 : 1

S727 : 2

S728 : 3

S729 : +10

S730 : <<<]

S731 : <>]

S732 : PLAY

S733 : <<<]

S734 : <>>]

S735 : ADLC

MEM TYPES

name as the PD - M450 / KU type with the exception of the following

Part No.				Remarks
- M450/ U type	PD - M450/ KUXJS type	PD - M450/ KC type	PD - M450/ MEM type	
VM1468 PTT1187 CM - 22	PWM1480 PTT1203 CM - 22	PWM1468 PTT1187 CM - 22	PWM1469 Non supply PTT1188 CM - 22B	For packing
DG1010 PAM1478 PEA1134 KAI201	RDG1010 PAM1478 PEA1134 PXA1201	RDG1010 PAM1478 PEA1134 PXA1201	PDG1003 PAC1370 PAM1506 PEA1160	
..... n supply HG1597 RB1142	..... Non supply PHG1675 PRB1152	..... Non supply PHG1662 PRB1142	VNK1095 PNM1070 Non supply PHG1691
.....	.....	.....	PRE1144
.....	.....	PRC1031	.....

ARDS CONNECTION DIAGRAM of the KUXJS and KC types,

PWM1469)
) are the same as the mother board assembly
ns.

Part No.			Remarks
IM1468	PWM1480	PWM1469	
..... 6PM681J	..... RDI/6PM681J	ICP-N10 BA15218 RDI/6PM271J RDI/6PM471J Non supply LFAR22M	

ame as the mother board assembly (PWM1468) for the service

I type is the same as that of the PD - M550 and PD - M455 types.

9.5 SCHEMATIC DIAGRAM OF THE MEM AND UB TYPES

1. RESISTORS :

Indicated in Ω , 1/4W, 1/6W and 1/8W, \pm 5% tolerance unless otherwise noted K,K Ω ,
M,M Ω , (F); \pm 1%, (G); \pm 2%, (K); \pm 10%, (M); \pm 20% tolerance.

2. CAPACTORS :

Indicated in capacity (μ F)/voltage(V)unless otherwise noted p ; pF. Indication without
voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :

☐ :DC voltage(V)at play state.
 \Leftarrow mA :DC current at play state.
Value In ()Is DC current at stop state.

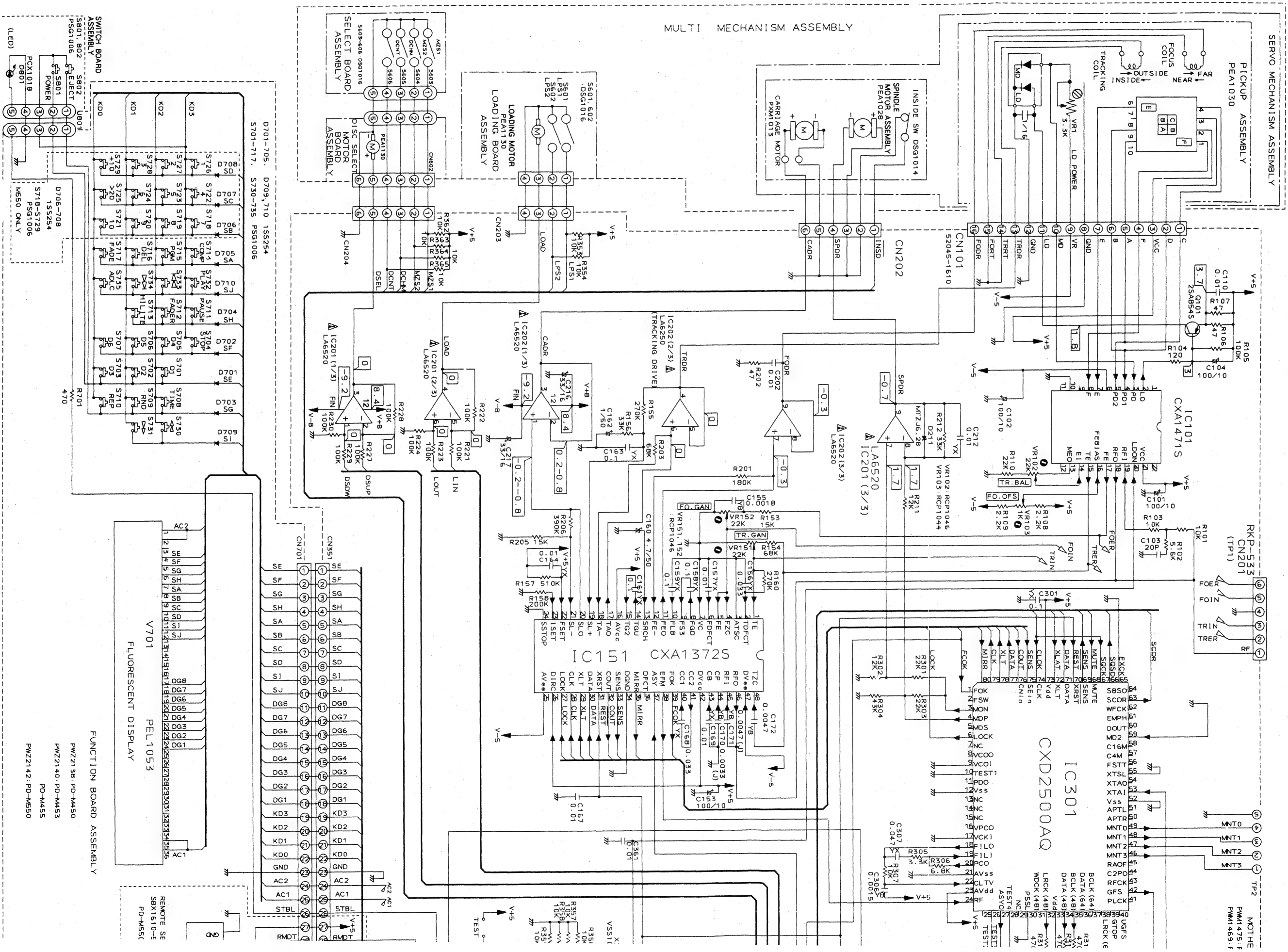
4. OTHERS :

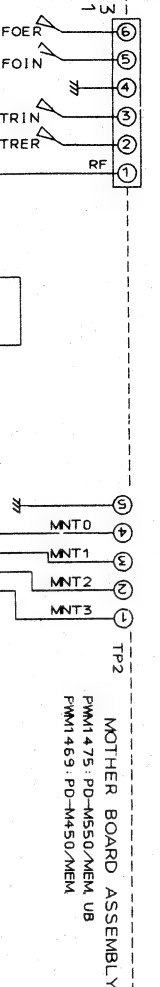
\rightarrow :Signal route.
 \odot :Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety
factor of the part. Therefore, when replacing, be sure to use parts of identical
designation.
* marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to
improvements in design.

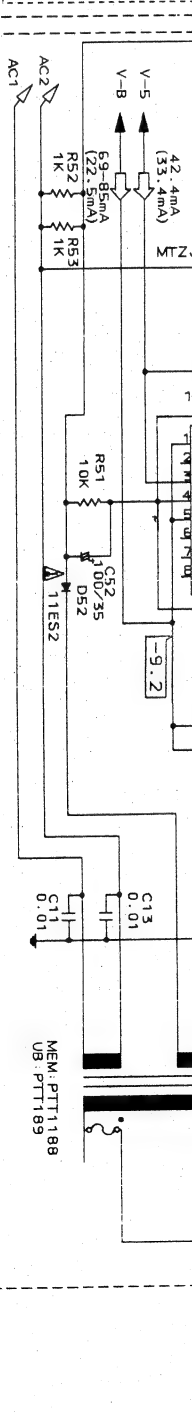
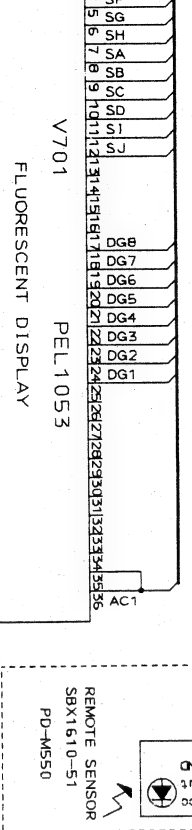
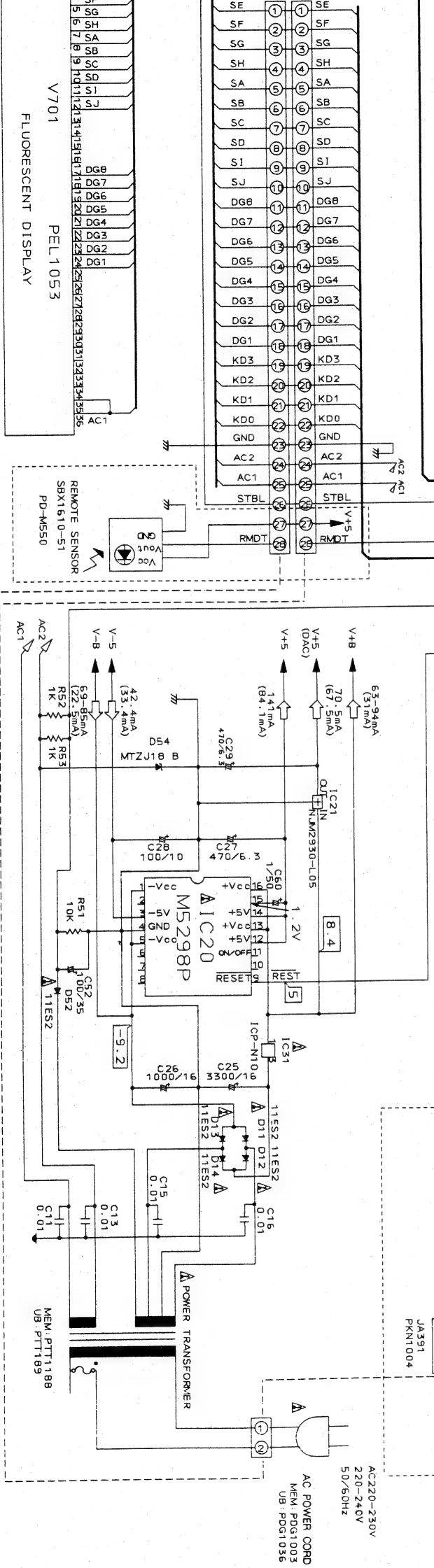
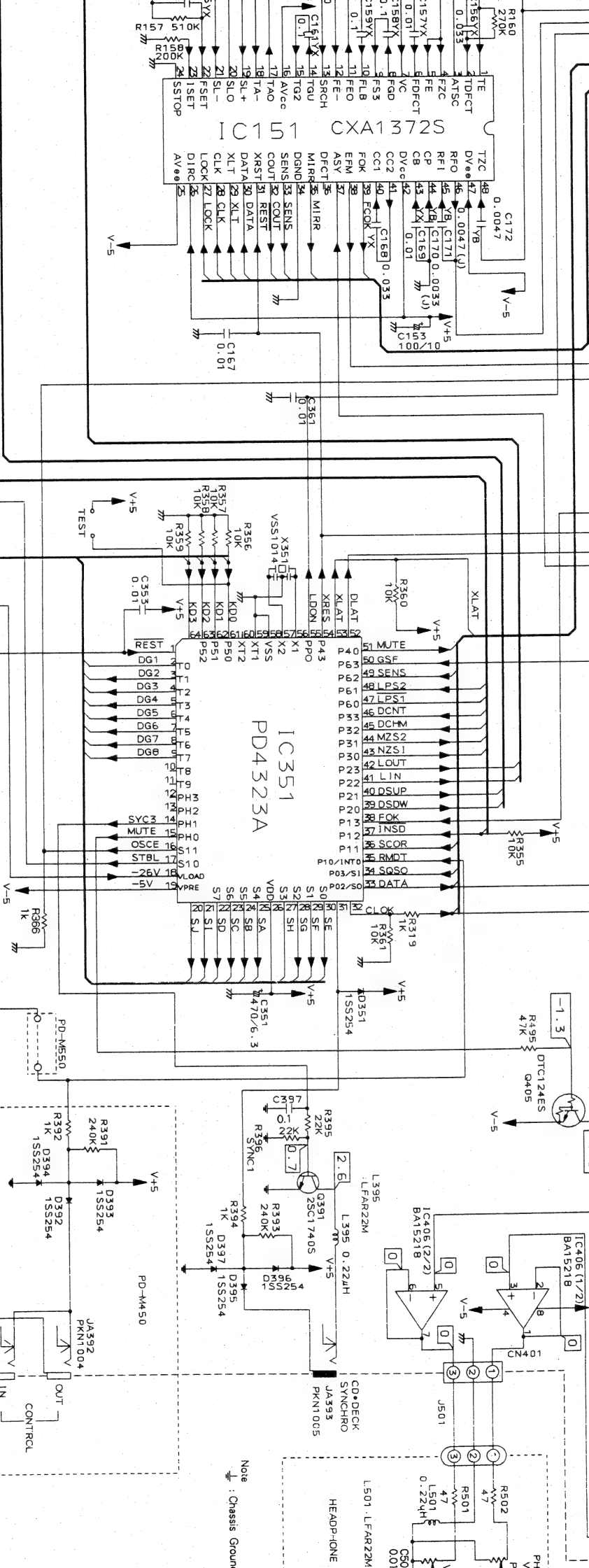
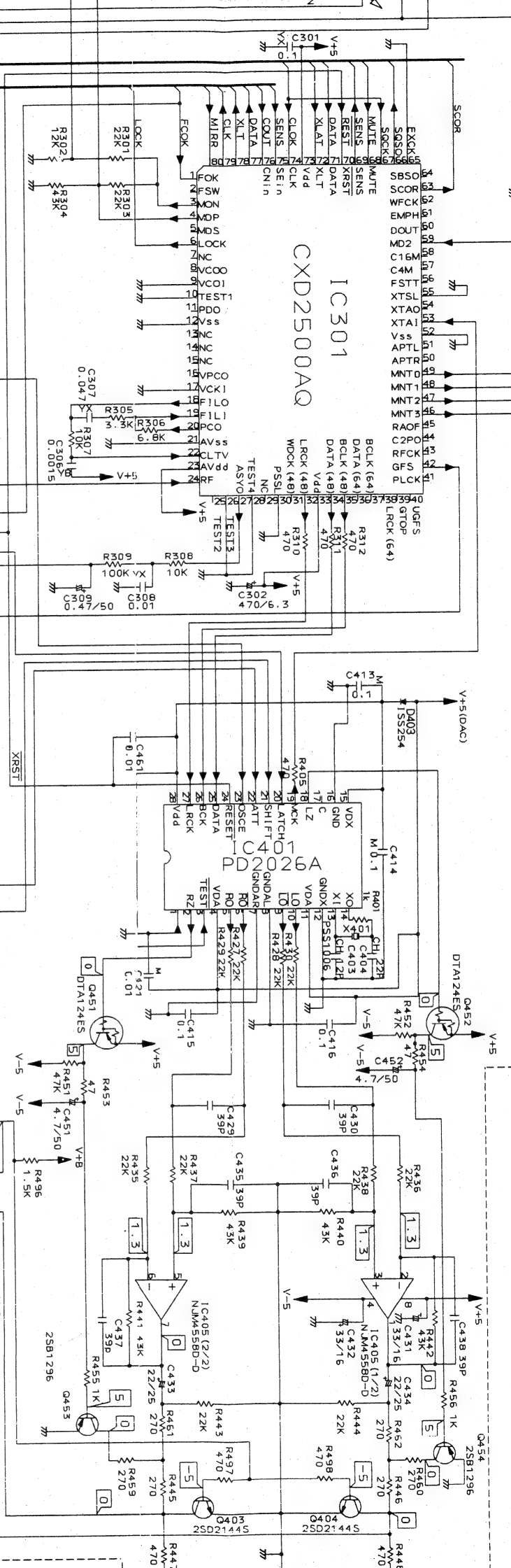
5. SWITCHES : (The underlined indicates the switch position)

SWITCH BOARD ASSEMBLY
S801 : POWER ON—OFF
S802 : EJECT
SERVO MECHANISM ASSEMBLY
INSIDE SWITCH
LOADING BOARD ASSEMBLY
S601 : LPS1
S602 : LPS2
SELECT BOARD ASSEMBLY
S603 : MZS1
S604 : MZS2
S605 : DCHM
S606 : DCNT
FUNCTION BOARD ASSEMBLY
(PD - M550 TYPE)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S718 : 7
S719 : 8
S720 : 9
S721 : 10
S722 : 4
S723 : 5
S724 : 6
S725 : \approx 20
S726 : 1
S727 : 2
S728 : 3
S729 : *10
S730 : \triangleleft] MANUAL SEARCH
S731 : \triangleright]
S732 : PLAY
S733 : $\square\triangleleft$] TRACK SEARCH
S734 : $\square\triangleright$]
S735 : ADLC
FUNCTION BOARD ASSEMBLY
(PD - M455, PD - M453 AND PD - M450 TYPES)
S701 : DISC1
S702 : DISC2
S703 : DISC3
S704 : STOP
S705 : DISC4
S706 : DISC5
S707 : DISC6
S708 : TIME
S709 : RANDOM PLAY
S710 : REPEAT
S711 : PAUSE
S712 : AUTO FADER
S713 : HI - LITE SCAN
S714 : COMPU PGM
S715 : PGM
S716 : DELETE
S717 : TIME FADE
S730 : \triangleleft] MANUAL SEARCH
S731 : \triangleright]
S732 : PLAY
S733 : $\square\triangleleft$] TRACK SEARCH
S734 : $\square\triangleright$]
S735 : ADLC





MOTHER BOARD ASSEMBLY
PMM1475: PD-M550/MEU UB
PMM1469: PD-M450/MEU



FUNCTION BOARD ASSEMBLY

- PWZ2138: PD-M450
- PWZ2140: PD-M453
- PD-M455
- PWZ2142: PD-M550

	PD-M450	PD-M550
CN351	9602S-26C	9602S-28C
CN701	9602S-26F	9602S-28F

AC220-230V
220-240V
50/60Hz
AC POWER CORD
MEM: PD61003
UB: PD61036

Note
Chassis Ground

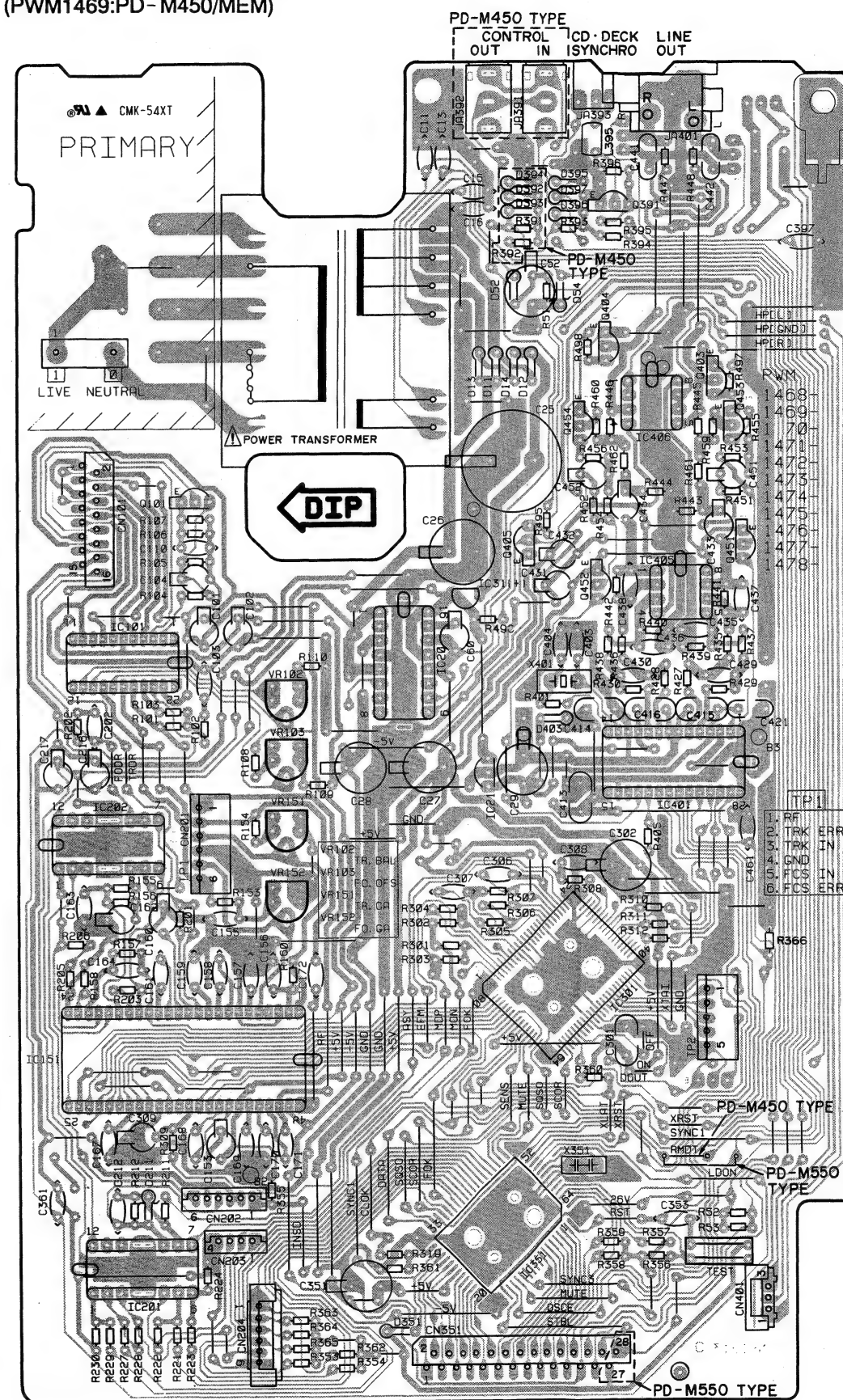
HEADPHONE

9.6 P.C.BOARD PATTERN OF THE MEM AND UB TYPES

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
		Zener diode			Electrolytic capacitor (Non polarized)
		LED			Electrolytic capacitor (Polarized)
		Varactor			Power capacitor
		Tact switch			Semi-fixed resistor
		Resistor array			Resistor
		Inductor			Resonator
		Coil			Thermistor
		Transformer			
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

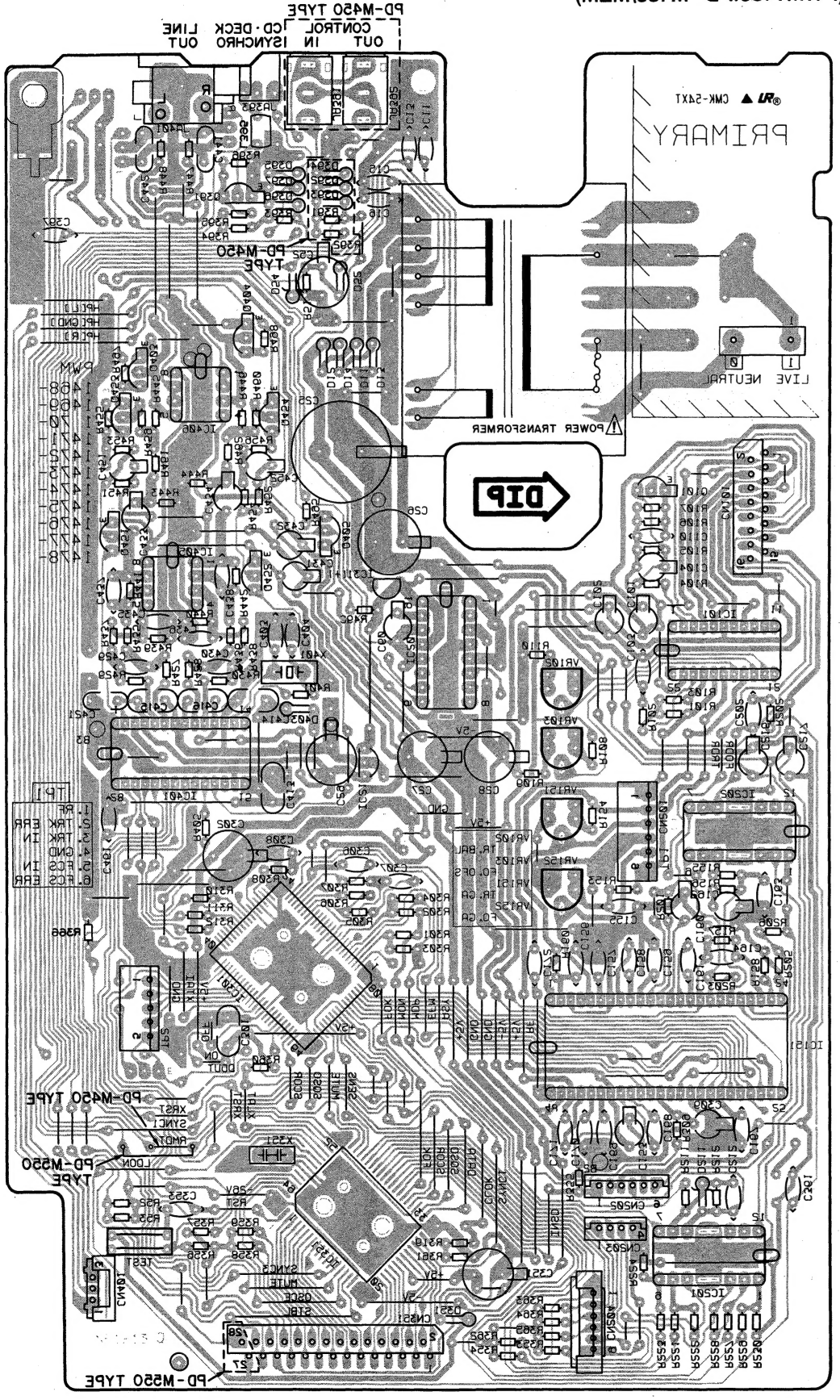
MOTHER BOARD ASSEMBLY
(PWM1475:PD - M550/MEM, UB)
(PWM1469:PD - M450/MEM)



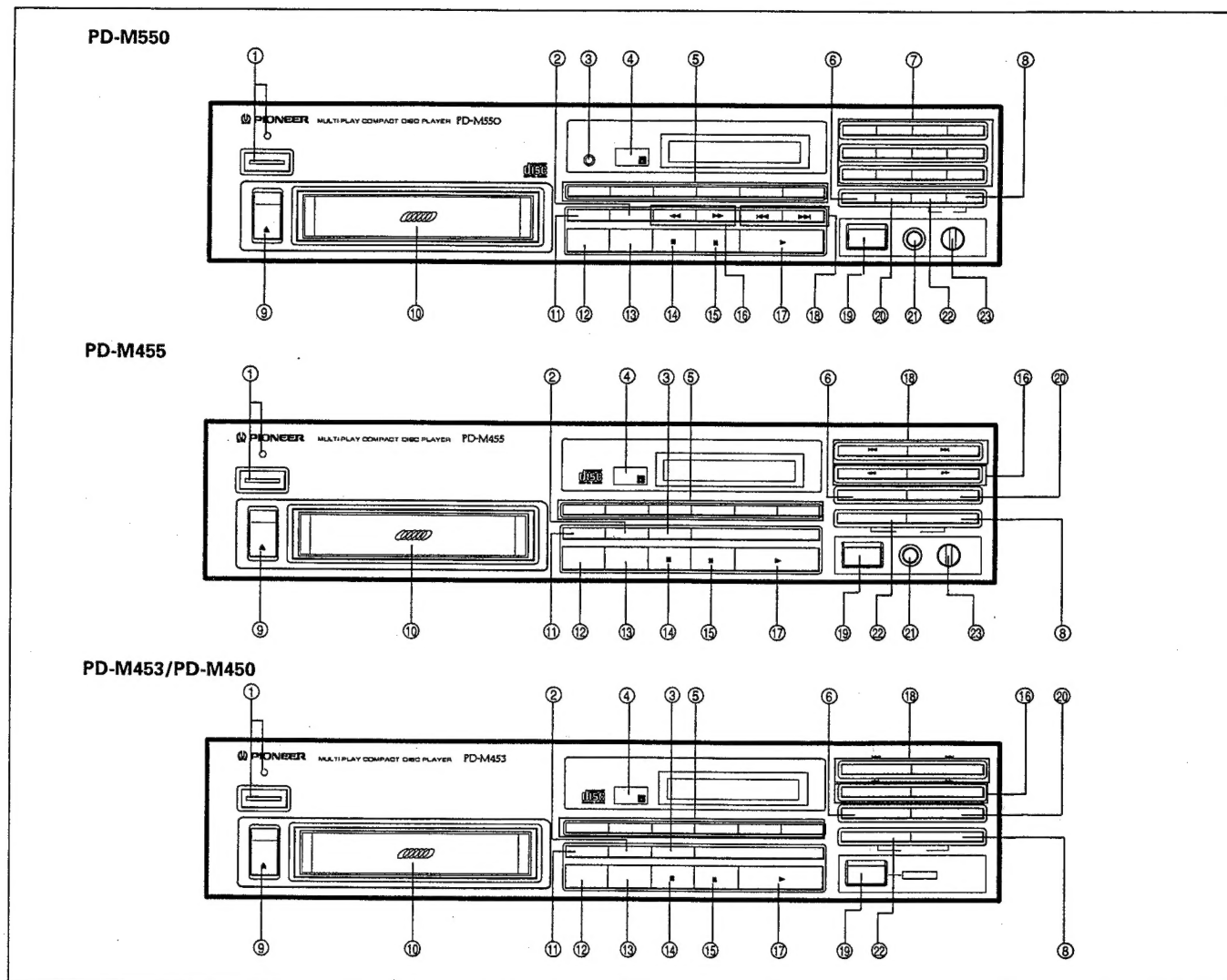
PD - M550/MEM,UB,
PD - M450/MEM

This P.C.B. connection diagram is viewed from the foil side.

(PWM1460:PD-M450(MEM)
(PWM1475:PD-M520(MEM,UB)
MOTHER BOARD ASSEMBLY

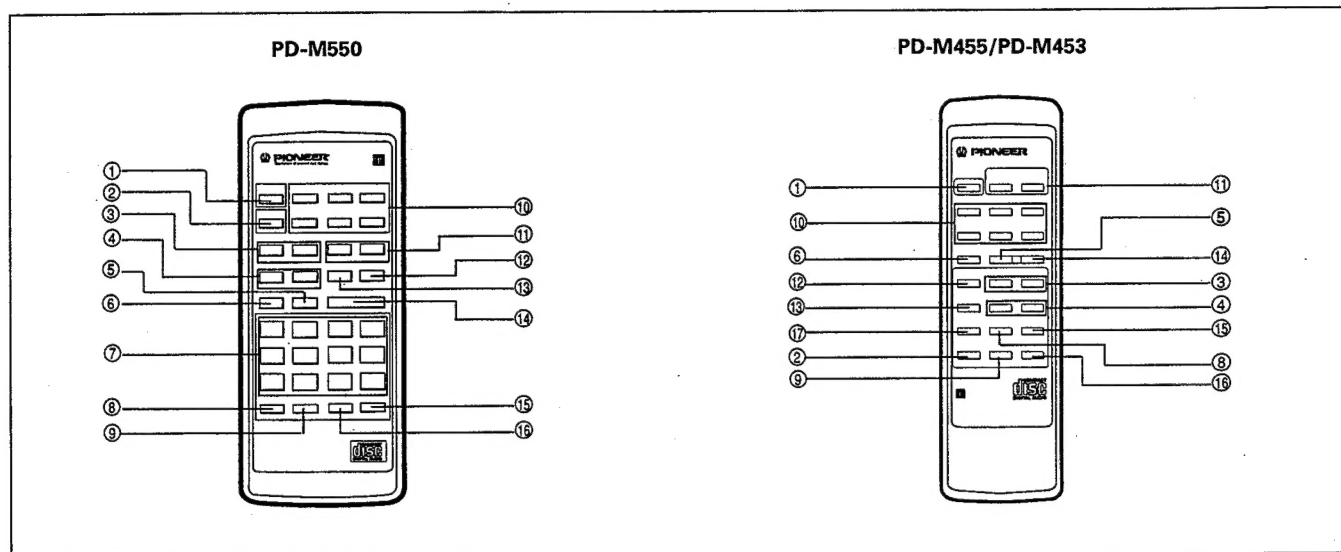


10. PANEL FACILITIES



FRONT PANEL

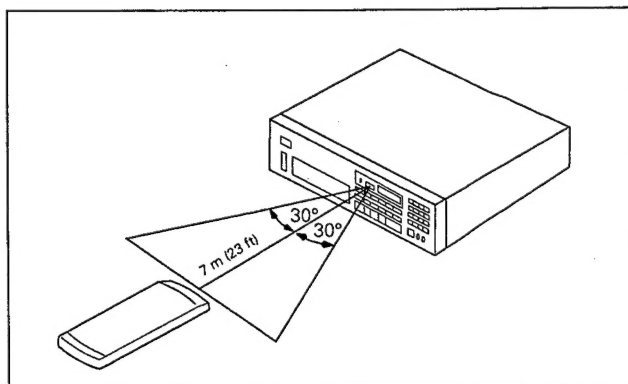
- | | |
|---|---|
| <p>① POWER STANDBY/ON switch and STANDBY indicator</p> <p>② AUTO FADER button</p> <p>③ TIME button</p> <p>④ Remote sensor (PD-M550/PD-M455/PD-M453 only)
Receives the signal from the remote control unit.
• The PD-M450 is not equipped with the remote sensor.</p> <p>⑤ Disc number buttons (DISC 1 - DISC 6)</p> <p>⑥ PGM (program) button</p> <p>⑦ TRACK NUMBER/Digit buttons (1-10, +10, ≥20) (PD-M550 only)</p> <p>⑧ TIME FADE EDIT button</p> <p>⑨ EJECT button (▲)</p> <p>⑩ Magazine insertion slot</p> | <p>⑪ REPEAT button</p> <p>⑫ RANDOM PLAY button</p> <p>⑬ HI-LITE SCAN button</p> <p>⑭ Stop button (■)</p> <p>⑮ Pause button ()</p> <p>⑯ Manual search buttons (◀◀/▶▶)</p> <p>⑰ Play button (▶)</p> <p>⑱ Track search buttons (◀◀/▶▶)</p> <p>⑲ ADLC (Automatic Digital Level Controller) button</p> <p>⑳ DELETE button</p> <p>㉑ Headphones jack (PHONES) (PD-M550/PD-M455 only)</p> <p>㉒ COMPU PGM EDIT button</p> <p>㉓ Headphones volume (PHONES LEVEL) (PD-M550/PD-M455 only)</p> |
|---|---|



REMOTE CONTROL UNIT (PD-M550/PD-M455/PD-M453 only)

Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

- ① POWER button
- ② ADLC (Automatic Digital Level Controller) button
- ③ MANUAL search buttons (◀◀ / ▶▶)
- ④ TRACK search buttons (◀◀ / ▶▶)
- ⑤ PAUSE button (||)
- ⑥ STOP button (■)
- ⑦ Track number/Digit buttons (1-10, +10, ≥ 20) (PD-M550 only)
- ⑧ PGM (program) button
- ⑨ CHECK button
- ⑩ DISC NUMBER buttons (1 - 6)
- ⑪ OUTPUT LEVEL buttons (+ / -)
- ⑫ RANDOM PLAY button
- ⑬ HI-LITE SCAN button
- ⑭ PLAY button (▶)
- ⑮ DELETE button
- ⑯ CLEAR button
- ⑰ FADER button (PD-M455/PD-M453 only)



REMOTE CONTROL OPERATIONS (PD-M550/PD-M455/PD-M453 only)

When operating the remote control unit, point the unit's infrared signal transmitter at the remote control receiver (REMOTE SENSOR) on the front panel of the player. The remote control unit can be used within a range of about 7 meters (23 feet) from the remote sensor, and within angles of up to about 30 degrees.

NOTE:

If the remote control sensor window is in a position where it receives strong light such as sunlight or fluorescent light, control may not be possible.

Notes for PD-M450:

Operate the PD-M450 using the remote control unit which accompanies the amplifier.

11. SPECIFICATIONS

1. General

Type	Compact disc digital audio system
Power requirements	
European models	AC 220 - 230 V, 50/60 Hz
U.K. and Australian models	AC 230 - 240 V, 60 Hz
U.S. and Canadian models	AC 120 V, 60 Hz
Other models	AC 110/120 - 127/220/240 V (switchable), 50/60 Hz
Power consumption	12 W
Operating temperature	+5°C - +35°C (+41°F - +95°F)
Weight	3.9 kg (8 lb, 10 oz)
External dimensions	
PD-M550	420(W) X 291(D) X 101(H) mm 16-9/16(W) X 11-7/16(D) X 4(H) in
PD-M455/PD-M453/PD-M450	420(W) X 291(D) X 96(H) mm 16-9/16(W) X 11-7/16(D) X 3-12/16(H) in

2. Audio section

Frequency response	2 Hz - 20 kHz
S/N ratio	102 dB or more (EIAJ)
Dynamic range	96 dB or more (EIAJ)
Harmonic distortion	0.003% or less (EIAJ)
Output voltage	2.0V
Wow and flutter	Limit of measurement (±0.001% VV.PEAK) or less (EIAJ)
Channels	2-channel (stereo)

3. Output terminal

Audio line output
Headphone jack with volume control (PD-M550/PD-M455 only)
Control input/output jacks (available with the PD-M450 and U.S. and Canadian models of the PD-M550, PD-M455 and PD-M453)
CD-DECK SYNCHRO jack

4. Functions

Number of discs to be stored - maximum 6.

Basic operation buttons
● PLAY, PAUSE, STOP

Search function
● Disc search
● Track search
● Manual search

Magazine Hi-Lite Scan
● DISC SCAN
● TRACK SCAN

Programming
● Maximum 32 steps
● Pause
● Program check/correction (remote control unit provided with PD-M550/PD-M455/PD-M453 only)
● Program clear (single track or all tracks) (remote control unit provided with PD-M550/PD-M455/PD-M453 only)
● Delete play

Repeat functions

- 1 track repeat
- All discs repeat
- Program repeat
- Random play repeat
- Delete play repeat
- Delete random play repeat
- Magazine Hi-Lite scan repeat

Random play

- Random play (repeat also available)
- Delete random play (repeat also available)

Switching display

Time consumed, remaining time (track/disc), and total time

Timer start

ADLC

Digital level controller (PD-M550/PD-M455/PD-M453 only)
Volume control can be done.

One-touch fade

Fade-in and fade-out possible.

Time fade editing

Selects the tracks within the specified time. Playback pauses with a fade-out.

Compu program editing

Selects the tracks for both sides within the specified time.

Power ON/OFF function (remote control unit provided with PD-M550/PD-M455/PD-M453 only)

Automatic Power On


Power Down Eject

5. Accessories

● Remote control unit (PD-M550/PD-M455/PD-M453 only)	1
● Size AAA/R03/dry batteries	2
(PD-M550/PD-M455/PD-M453 only)	1
● Six-compact-disc magazine	1
● Control cord (provided with PD-M450 and U.S. and Canadian models of PD-M550/PD-M455/PD-M453 only)	1
● Output cable	1
● Operating instructions	1

NOTE:

Specifications and design subject to possible modification without notice, due to improvements.

The Magazine Type Multi-Play CD Players with  mark and the Magazines with the same mark are compatible for 5-inch (12cm) discs.